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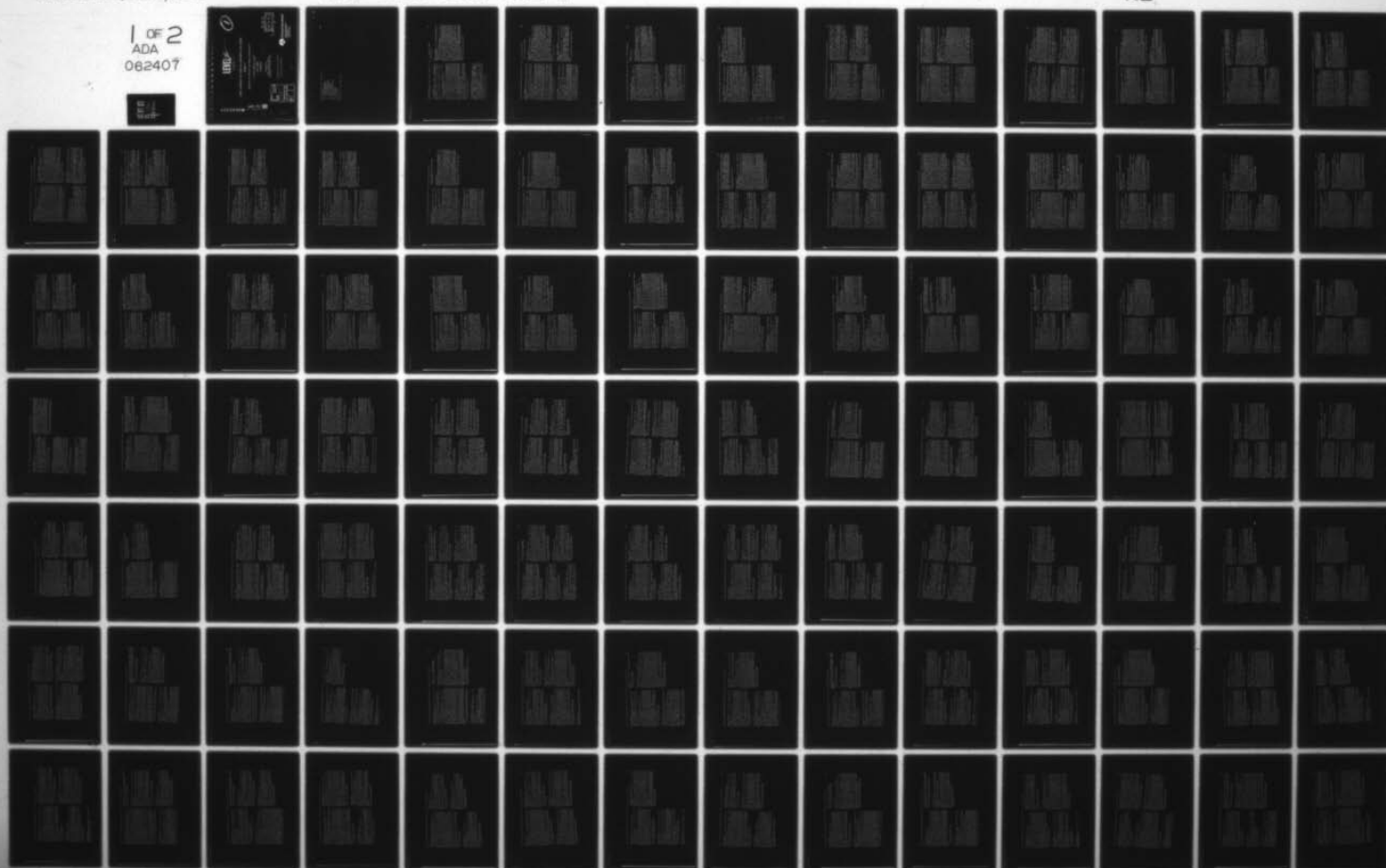
ROCKWELL INTERNATIONAL ANAHEIM CA ELECTRONIC DEVICES DIV F/G 9/3
HYBRID TECHNOLOGY COST REDUCTION IMPROVEMENT SUDY PROGRAM. VOLU--ETC(U)
APR 78 N00163-77-C-0299

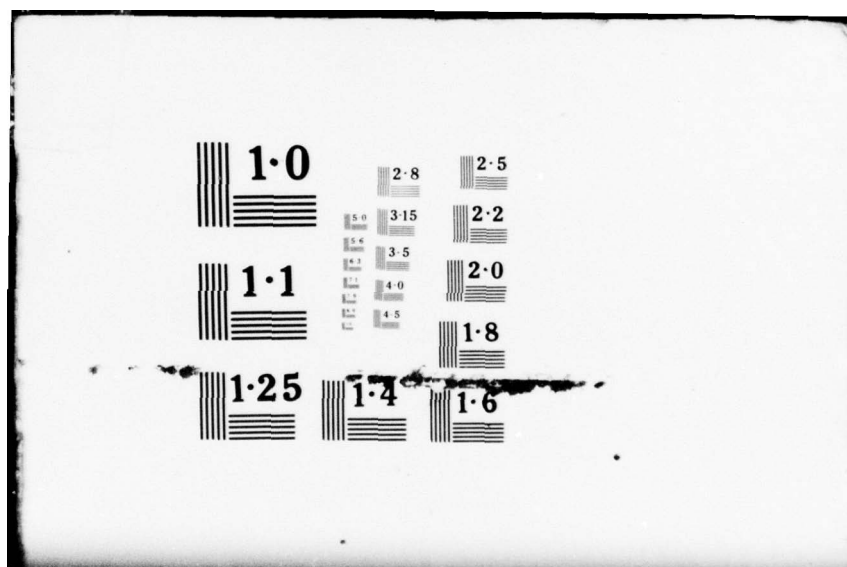
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C78-299/501-VOL-2

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C78-299/501

406-2

HYBRID TECHNOLOGY COST REDUCTION IMPROVEMENT STUDY PROGRAM

VOLUME II

ABSTRACTS OF ARTICLES ON HYBRID MICROCIRCUITS

Contract N00163-77-C-0299

FINAL REPORT

APRIL, 1978

109P

Prepared for:

NAVAL AVIONICS CENTER
Indianapolis, Indiana 46218

ACCESSION NO.	WFO	White Section	<input checked="" type="checkbox"/>
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1	0	HYBRID MICRO CIRCUITS
2	0	HYBRID MICRO CIRCUITS
3	0	HYBRID MICRO CIRCUITS
4	44	HYBRID MICRO CIRCUITS
5	0	THICK (W) FILM CIRCUITS
6	0	THICK (W) FILM CIRCUITS
7	3	THICK FILM CIRCUITS
8	178	THIN FILM CIRCUITS
9	205	THIN FILM CIRCUITS
10	504	HYBRID INTEGRATED CIRCUITS
11	45	40K7-9
12	0	40K7-9
13	308	40K7-9
14	308	40K7-9

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Language: SLOVENE

1097194 C77023148
A VERSATILE, EASILY ASSIMILATED MICROCOMPUTER FOR INSTRUMENTATION DEVELOPMENT APPLIED TO DIRECT PHOTOGRAPHIC MASK GENERATION
SCHWALZEL, J.L.; D'LUNA, L.J.; LUCAS, M.S.P.; GALLAGHER, R.P.
DEPT. OF ELECTRICAL ENGRG., KANSAS STATE UNIV., MANHATTAN, KS, USA
IEEE ANNUAL CONFERENCE PROCEEDINGS ON INDUSTRIAL APPLICATIONS OF MICROPROCESSORS 174-9 1977
21-23 MARCH 1977 PHILADELPHIA, PA., USA

A LOW-COST MICROCOMPUTER WITH AN APPLICATION TO DIRECT PHOTOGRAPHIC MASK GENERATION IS DESCRIBED. THE MICROCOMPUTER REPRESENTS AN EFFORT TO EXTEND THE POWER OF MICROPROCESSOR SOLUTIONS TO SYSTEMS WHERE THE MICROCOMPUTER REPRESENTS A SIGNIFICANT PORTION OF THE TOTAL SYSTEM COST. 512 BYTES OF 170-A PROM AND 256 BYTES OF RAM WITH THE CPU AND ALL ASSOCIATED CONTROL CIRCUITRY ARE CONTAINED ON A SINGLE 3.5" DISK. THE MICROCOMPUTER SPEEDS PROTOTYPE DEVELOPMENT BECAUSE IT IS TREATED AS A MODULE IN SYSTEM DESIGN. THE TIME-CONSUMING PREPARATION OF CUT-MASTER APPLICATIONS FOR THICK-FILM CIRCUIT FABRICATION HAS BEEN ELIMINATED BY INCORPORATING THE MICROCOMPUTER IN A DIRECT PHOTOGRAPHIC MASK GENERATION SYSTEM. PAD LOCATIONS ARE ENTERED WITH A KEYBOARD AND THE PATTERN IS TRANSFERRED TO PHOTOGRAPHIC FILM BY CONTROLLING THE MOVEMENT OF AN X-Y TABLE WITH RESPECT TO A COLLIMATED LIGHT SOURCE (2 refs)

Descriptors: MASKS; COMPUTERISED CONTROL
Identifiers: MICROCOMPUTERS; DIRECT PHOTOGRAPHIC MASK GENERATION; SYSTEM COST; CONTROL CIRCUITRY; KEYBOARD; COLLIMATED LIGHT SOURCE; CUT MASTER ARBORK TIME CONSUMING PREPARATION; THICK FILM CIRCUIT; PAD LOCATION

06
Section Class Codes: C7490, C3370N

1092802 B77032254
RESISTANCE INCREASES IN GOLD ALUMINUM INTERCONNECTS WITH TIME AND TEMPERATURE
BUSHNIRE, D.W.
SANDIA LABS., ALBUQUERQUE, NM, USA
IEEE TRANS., PARTS, HYBRIDS AND PACKAG. (USA) VOL. PHP-13, NO. 2 152-6 JUNE 1977 Coden: IEPHAA

INCREASES IN THE RESISTANCE OF GOLD ALUMINUM INTERCONNECTS WITH TIME AND TEMPERATURE WERE INVESTIGATED. ALUMINUM WIRE WAS ULTRASONICALLY BONDED TO CR-AU AND TIPO-AU THIN-FILM METALLIZATION ON CERAMIC SUBSTRATES. THE INTERCONNECTS WERE EXPOSED TO TEMPERATURES FROM 150 TO 300 DEGREES FOR TIMES UP TO 400 H. THE RESISTANCE OF THE INTERCONNECTS WERE MEASURED PERIODICALLY DURING THE EXPOSURE TO ELEVATED TEMPERATURES. THERE WERE SIGNIFICANT INCREASES IN RESISTANCE ON BOTH TYPES OF METALLIZATION. SOME MEASUREMENTS INDICATED ELECTRICALLY OPEN INTERCONNECTS, BUT THE MECHANICAL STRENGTH REMAINED HIGH. IF SYSTEMS CONTAINING GOLD ALUMINUM INTERCONNECTS ARE ANTICIPATED TO BE PROCESSED OR USED AT OR ABOVE 150 DEGREES, SERIOUS CONSIDERATION SHOULD BE GIVEN TO THE EFFECTS OF INCREASED RESISTANCE ON CIRCUIT PERFORMANCE (8 Refs)

Descriptors: LEAD BONDING; METALLIZATION; GOLD; ALUMINUM; ULTRASONIC APPLICATIONS; THIN FILM CIRCUITS; CONTACT RESISTANCE; HYBRID INTEGRATED CIRCUITS
Identifiers: AU AL INTERCONNECTS; ULTRASONIC WIRE BONDING; EXPERIMENTAL RESULTS; CR-AU THIN FILMS METALLIZATION; TIPO-AU THIN FILM METALLIZATION; TEMPERATURE EFFECTS; TIME EFFECTS; RESISTANCE INCREASES

02
Section Class Codes: B2240, B7820, B2220J

1097195 B77032245, C77022207
MICROCOMPUTER IN THE THIN FILM HYBRID TECHNOLOGY
BILIC, A.; BUTINA, V.; GRUDEN, D.; HERCOG, D.; JERVOL, P.; KERIC, A.; MOSTEC, D.; LOKOVSEK, J.; NAJGEN, J.; MESAR, J.; MLACAR, J.; WRAN, V.; OZBOLT, S.; PRELOVSEK, A.; RAIC, D.; RAZINGER, J.; ROZMAN, V.; RUNCOC, F.; SLIVNIK, T.; STAVANJA, P.; STREL, D.; TRONTELJ, J.; TRONTELJ, L.
ELEKTROTEH. VESTN. (YUGOSLAVIA) VOL. 43, NO. 4 189-92 SEPT.-OCT. 1976 Coden: ELVEAZ

A SURVEY OF THE MICROCOMPUTER FE A20 IS GIVEN IN THE PAPER AS AN EXAMPLE OF APPLICATION OF THIS TECHNOLOGY ON MICROCOMPUTERS HYBRID INTEGRATED CIRCUITS; THIN FILM CIRCUITS; MICROCOMPUTERS

Identifiers: THIN FILM HYBRID TECHNOLOGY
02
Section Class Codes: B2220J, B2220E, C5410

1092643 B77032043
DESIGN AND PROCESS CONSIDERATIONS FOR HYBRID ACTIVE FILTER
APPLICATIONS
SHIPP, R.E.
HELLIPOT DIV... BECKMAN INSTRUMENTS INC., FULLERTON, CA. USA
IEEE

1977 IEEE INTERNATIONAL SYMPOSIUM ON CIRCUITS AND SYSTEMS
PROCEEDINGS 309-12 1977
25-27 APRIL 1975 PHOENIX, ARIZ., USA
IEEE NEW YORK, USA

A CHRONOLOGY OF PRODUCT DEVELOPMENT SHOWS THE EVOLUTION OF
THE DESIGN AND PROCESS TECHNIQUES FOR CONSTRUCTION OF ACTIVE
RC FILTERS. CERMET THICK FILM CIRCUITS FOR THE
TELECOMMUNICATIONS INDUSTRY WERE DESIGNED TO BE ACTIVELY
TUNED TO VALUE AT THIS JUNCTION. THE DECISION WAS MADE TO
ACTIVELY FUNCTIONALLY TUNE THE FILTER PARAMETERS OF CENTER
FREQUENCY, Q, AND GAIN. THIS WAS ACCOMPLISHED USING A
COMPUTER-CONTROLLED LASER SYSTEM WHICH WAS THEN EXTENDED TO
PRECISION MILITARY FILTER APPLICATIONS. TO MEET THESE TIGHTER
REQUIREMENTS, ANOTHER FILTER WAS DEVELOPED WHICH EMPLOYED THIN
FILM TECHNOLOGY TO INCREASE TIME AND TEMPERATURE STABILITY (6
REFS)

Descriptons: ACTIVE FILTERS; INTEGRATED CIRCUIT TECHNOLOGY;
THICK FILM CIRCUITS; THIN FILM CIRCUITS; HYBRID INTEGRATED
CIRCUITS
Identifiers: HYBRID ACTIVE FILTER; CHRONOLOGY; EVOLUTION;
DESIGN; PROCESS TECHNIQUES; ACTIVE RC FILTERS; THICK FILM
CIRCUITS; THIN FILM TECHNOLOGY; TEMPERATURE STABILITY; ACTIVE
TUNING; COMPUTER CONTROLLED LASER SYSTEM
05

Section Class Codes: B1270E, B2220J

1092642 B77032042
A SET OF THICK FILM R-C ACTIVE FILTERS FOR PCM APPLICATION
SM, D.K.
GIE LENKURT INC., SAN CARLOS, CA. USA
IEEE

1977 IEEE INTERNATIONAL SYMPOSIUM ON CIRCUITS AND SYSTEMS
PROCEEDINGS 304-B 1977
25-27 APRIL 1975 PHOENIX, ARIZ., USA
IEEE NEW YORK, USA

WIDE TOLERANCE EQUAL VALUED CAPACITORS ARE USED FOR EASIER
PRODUCIBILITY AND LOW COST, AND A VERY FAST DETERMINISTIC
TRIMMING PROCEDURE IS USED FOR HIGH VOLUME PRODUCTION. THE
FIRST PART OF THE PAPER DESCRIBES SPECIFIC CIRCUITS AND DESIGN
METHODS USED. IN THE SECOND PART THE TRIMMING PROCEDURES ARE
DESCRIBED. A DISCUSSION OF THE PERFORMANCE OF THE FILTERS AND
FUTURE DEVELOPMENTS FOLLOWS (11 Refs)

Descriptons: ACTIVE FILTERS; INTEGRATED CIRCUIT TECHNOLOGY;
PULSE-CODE MODULATION; THICK FILM CIRCUITS
Identifiers: PCM; EQUAL VALUED CAPACITORS; PRODUCTIVITY;
COST; DETERMINISTIC TRIMMING PROCEDURE; HIGH VOLUME PRODUCTION
; DESIGN METHODS; PERFORMANCE; THICK FILM RC ACTIVE FILTERS
06

Section Class Codes: B1270E, B2220J

1092322 B77031396
NONHERMETICITY OF POLYMERIC LID SEALANTS
TRAEGER, R.K.
SANDIA LABS., ALBUQUERQUE, NM, USA
IEEE TRANS. JUNE 1977 Coden: IEPHAA
NO.2 147-52

ORGANIC ADHESIVES ARE USEFUL LID SEALANTS BECAUSE THEY ARE
PROCESSED AT LOW TEMPERATURES, ARE INEXPENSIVE, AND ARE EASY
TO REWORK. HOWEVER, THERE HAS BEEN CONCERN ABOUT THE DEGREE OF
PROTECTION ORGANICS CAN PROVIDE MOISTURE-SENSITIVE COMPONENTS.
DATA PRESENTED IN THIS PAPER SHOW THAT ORGANIC ADHESIVES CAN
SEAL PACKAGES WHICH PASS GROSS AND FINE LEAK TESTS BUT ALLOW
WATER VAPOR TO PERMEATE RAPIDLY. PERMEATION MEASUREMENTS ON
HYBRID MICROCIRCUIT PACKAGES GAVE SEAL PERMEABILITIES OF
3-7*10/SUP -11/ G/CM-S-TORR. THESE PERMEABILITIES AGREE WITH
THOSE LISTED FOR EPOXIES IN THE LITERATURE. WITH THIS
PERMEABILITY RANGE AND THE PACKAGE CONFIGURATION USED IN THIS
STUDY, THE INTERIOR HUMIDITY OF A PACKAGE WILL REACH 50
PERCENT OF THE EXTERIOR HUMIDITY IN 6-10 H (15 Refs)

Descriptons: ENCAPSULATION; POLYMERS
Identifiers: POLYMERIC LID SEALANTS; HYBRID MICROCIRCUIT
PACKAGES; WATER VAPOR PERMEABILITY; 3 TO 7 X 10/SUP -11/
G/CM-S-TORR PERMEABILITIES; PERMEABILITY MEASUREMENTS;
SEMICONDUCTOR DEVICE ENCAPSULATION; NONHERMETICITY; IC
ENCAPSULATION
02

Section Class Codes: B0170J

1086937 B77028422, C77020548
SPECIAL REPORT: ACTIVE FILTERS RIDE THE CREST OF NEW
TECHNOLOGY

RITZENMAN, M.J.
ELECTRONICS (USA) VOL.50, NO.11 119-24 26 MAY 1977
Codon: ELECAD
21-FET OP AMPS IMPROVED THICK-FILM INKS, AND COMPUTER
OPTIMIZED DESIGN ARE DISCUSSED (3 Refs)
Descriptons: CIRCUIT CAD; HYBRID INTEGRATED CIRCUITS;
OPERATIONAL AMPLIFIERS; THICK FILM CIRCUITS; ACTIVE FILTERS
Identifiers: ACTIVE FILTERS; NEW TECHNOLOGY; BIFET
OPERATIONAL AMPLIFIERS; THICK FILM INKS; COMPUTER OPTIMISED
DESIGN
02

Section Class Codes: B1270E, B1220, B2220G, C74100

C74100

Language: HUNGARIAN

108G-133 B77028624, C77020104
FUSING MECHANISM OF NICHROME THIN FILMS
DAVIDSON, J.L.; GIBSON, J.D.; ROSSITER, T.J.; HARRIS, S.A.
HARRIS SEMICONDUCTOR, MELBOURNE, FL, USA
ORDE ELECTR. (FRANCE) VOL. 57, NO. 5 373-80 MAY 1977
CODING: QHELAS

CONDUCTION ELECTRONS IN NICHROME HAVE A SHORT MEANFREE PATH. THIS MAXIMIZES 1/SUP 2/R HEATING AND PRECLUDES ELECTROMIGRATION IN THE DIRECTION OF ELECTRON FLOW AS A FUSING MECHANISM. TRANSMISSION ELECTRON MICROSCOPY IS THE ONLY EFFECTIVE ANALYTICAL TOOL TO CHARACTERIZE THE PROGRAMMED FUSE GAP STRUCTURE. PROGRAMMING FUSIBLE NICHROME IS DONE BY MOLTING METAL THICK FILMS. CURRENTLY, MOVING IN THE PRESENCE OF AN ELECTRIC FIELD, THE FINAL STRUCTURE RESSEMBLES A FROZEN SPLASH AND IS DESCRIBED BY FLUID DYNAMICS. THERMAL ANALYSIS COUPLED WITH EMPIRICAL PROGRAMMED FUSE DATA INDICATE A THRESHOLD POWER DENSITY FOR FUSING. IF THIS POWER DENSITY IS EXCEEDED, WHICH CAN BE ASSURED IF THE PROGRAMMING TIME UTILIZED IS AS SPECIFIED, THE FUSE GAP WILL BE WIDE AND RELIABLE. IF THIS POWER DENSITY THRESHOLD IS ONLY MATCHED, IT IS POSSIBLE TO CREATE A MARGINAL FUSE. LIFE TEST RESULTS INDICATE PROGRAMMED FUSE RELIABILITY IS EQUIVALENT TO DEVICES OF THE SAME COMPLEXITY THAT DO NOT UTILIZE FUSIBLE LITHS (25 Refs)

Descriptors: READ-ONLY STORAGE; THIN FILM DEVICES; THIN FILM CIRCUITS

Identifiers: NICHROME THIN FILMS; MEANFREE PATH; ELECTROMIGRATION; FUSE GAP STRUCTURE; FLUID DYNAMICS; THRESHOLD POWER DENSITY; PROGRAMMED PROM; FUSING MECHANISM; THERMAL ANALYSIS; TRANSMISSION ELECTRON MICROSCOPY

02

Section Class Codes: B2220E, B2190, C5320Z

Language: FRENCH

1070111 B77024610, C77018862
RESEARCH INSTITUTE FOR TELECOMMUNICATION INDUSTRY (THICK AND THIN FILM CIRCUITS)
HIRADASTECHNIA (HUNGARY) VOL. 27, NO. 12 357-8 DEC. 1976

CODING: HIRAG
A BRIEF REPORT IS GIVEN OF THE ACTIVITIES OF THE INSTITUTE IN THE FIELD OF THIN AND THICK FILM INTEGRATED CIRCUITS DEVELOPED TO CUSTOMERS' REQUIREMENTS. THE RESULT OF SEVERAL YEARS' DESIGN EFFORT IS A FAMILY OF ACTIVE RC FILTERS AND A SYSTEM OF COMPUTER PROGRAMS WHICH ENABLES THE DESIGN AND REALIZATION IN HYBRID INTEGRATION OF MINIMUM COST FILTER SYSTEMS MATCHED TO A GIVEN TOLERANCE SCHEME. THE STRUCTURES OF A VOLTAGE-TO-FREQUENCY CONVERTOR (HUF-01) AND 4/10 BIT D/A CONVERSIONS ARE OUTLINED

Descriptors: THIN FILM CIRCUITS; THICK FILM CIRCUITS; ACTIVE FILTERS; CONVERTORS; CIRCUIT CAD; DIGITAL-ANALOGUE CONVERSION; IDENTIFIERS: INTEGRATED CIRCUITS; ACTIVE RC FILTERS; D/A CONVERTORS; VOLTAGE/FREQUENCY CONVERTOR; HUNGARY; THIN FILM CIRCUITS

02

Section Class Codes: B2220E, B1270E, B1290B, B2220G, B1130B,

1070189 B77026440
THICK FILM NICKEL CONDUCTORS FOR DC GAS DISCHARGE DISPLAYS
PATTERSON, F.K.; MARCUS, S.M.; BACHER, R.J.
ELECTRONIC MATERIALS DIV., PHOTO PRODUCTS DEPT., DUPONT CO., WILMINGTON, DE, USA

INF. DISP. (USA) VOL. 13, 24-5 SPRING 1977 Coden: INFAD8

DISCUSSES A LOW-FIRING, NICKEL-CONDUCTOR COMPOSITION, DUPONT NO. 9530, PROCESSABLE ON SODA-LIME GLASS TO FORM CATHODES. IT ALSO MAKES AVAILABLE COMPATIBLE DIELECTRIC AND SILVER COMPOSITIONS FOR THE AIR FIREABLE NICKEL METALLIZATION, OF SPECIAL SIGNIFICANCE, FIRING IN A CONVENTIONAL AIR-FLOW BELT FURNACE ELIMINATES THE NEED FOR ATMOSPHERE CONTROL TUBES: THICK FILM CIRCUITS: DISPLAY DEVICES; GAS-DISCHARGE TUBES: THICK FILM CIRCUITS: CONDUCTORS (ELECTRIC)

Identifiers: DC GAS DISCHARGE DISPLAYS; DC PLASMA PANEL DISPLAYS; ALL GLASS DISPLAY; LOW FIRING TEMPERATURE NICKEL CONDUCTOR COMPOSITION; THICK FILM NICKEL CONDUCTORS; AIR FIREABLE THICK FILMS; SODA LIME GLASS COMPATIBLE THICK FILMS

02

Section Class Codes: B7260, B2220G, B2380

1068966 A77044397, B77024894
ETCH SPUTTERING OF BULK MATERIALS UNDER CONTROLLED
ATMOSPHERE

MISANO, C.; SIMONETTI, E.
SELENIA INDUSTRIE ELETTRONICHE ASSOCIATE SPA, ROMA, ITALY
VIDE (FRANCE) VOL.31, NO.184 138-41 AUG.-OCT. 1978
Codens: VIDEA

THE AUTHORS HAVE INVESTIGATED RF ETCH SPUTTERING OF BULK GE
AND INSB UNDER A CONTROLLED ATMOSPHERE OF AR WITH EITHER O/SUB
2/. N/SUB 2/. H/SUB 2/ OR H/SUB 2/O. THE ETCH RATES WERE
MEASURED AS A FUNCTION OF THE ATMOSPHERE, AND SURFACES
OBSERVED BY SEM. THE RESULTS HAVE BEEN APPLIED TO THE
ELIMINATION OF CONTAMINATION AS WELL AS TO MINIMIZING THE
THICKNESS OF MASKING MATERIAL. THE OPTIMIZATION OF THE
ATMOSPHERE DURING ETCH SPUTTERING HAS LED TO THE FABRICATION
OF THIN FILM MICROWAVE CIRCUITS WITH MINIMUM MASKING THICKNESS
AND EXCELLENT DEFINITION (19 Refs)

Descriptors: R.F. SPUTTERING; ETCHING; GERMANIUM; INDIUM
ANTIMONY; III-V SEMICONDUCTORS; ELEMENTAL SEMICONDUCTORS;
SEMICONDUCTOR TECHNOLOGY; SCANNING ELECTRON MICROSCOPE
EXAMINATION OF MATERIALS; THIN FILM CIRCUITS; SCANNING
ELECTRON MICROSCOPE EXAMINATION OF MATERIALS

Identifiers: BULK MATERIALS; CONTROLLED ATMOSPHERE; RF ETCH
SPUTTERING; GE; INSB; ETCH RATES; SEM; CONTAMINATION; MASKING
MATERIAL; THIN FILM MICROWAVE CIRCUITS; SEMICONDUCTOR
02

Section Class Codes: A8160, B2550E, B2220E

1068737 B77024629
APPLICATION OF TAPE AUTOMATED BONDING TECHNOLOGY TO HYBRID
MICROCIRCUITS

OSWALD, R.G.; DE MIRANDA, W.R.
HYMERWELL INC., ST. PETERSBURG, FL, USA
SOLID STATE TECHNOL. (USA) VOL.20, NO.3 33-8 MARCH
1977 Codens: SSTEAP

THE PRESENT TAPE AUTOMATED BONDING (TAB) TECHNOLOGY IS
REVIEWED UNDER THE FOLLOWING EIGHT HEADINGS: (1) WAFER
METALLIZATION AT CHIP CONNECTION PADS; (2) SUBSTRATE
MANUFACTURING; (3) TAPE/CARRIER MANUFACTURING; (4) DIE
SEPARATION; (5) INNER LEAD BONDING (ILB); (6) OUTER LEAD
BONDING; (OLB) (7) ELECTRICAL TESTING; (8) REMARK METHODOLOGY
(4 Refs)

Descriptors: INTEGRATED CIRCUIT MANUFACTURE; INTEGRATED
CIRCUIT TECHNOLOGY; HYBRID INTEGRATED CIRCUITS; LEAD BONDING
Identifiers: TAPE AUTOMATED BONDING TECHNOLOGY; HYBRID
MICROCIRCUITS; SUBSTRATE MANUFACTURING; CARRIER MANUFACTURING;
DIE SEPARATION; INNER LEAD BONDING; ILB; OUTER LEAD BONDING;
OLB; TAPE MANUFACTURING; TAB TECHNOLOGY; INTEGRATED CIRCUIT
MANUFACTURING
02

Section Class Codes: B2240, B2220J

1068734 B77024626
THIN FILM RESISTOR NETWORKS IN HYBRID CIRCUITS

GROTH, L.
HELIPOT DIV., BECKMAN INSTRUMENTS INC., FULLERTON, CA, USA
SOLID STATE TECHNOL. (USA) VOL.20, NO.3 45-9 MARCH
1977 Codens: SSTEAP

THE USE OF THIN FILM PRECISION RESISTOR NETWORKS IS
INCREASING IN THIN FILM HYBRIDS, WHERE THEIR TIGHTER
TOLERANCES, LOWER TCR, BETTER TCR TRACKING AND SMALL SIZE MAKE
POSSIBLE BETTER PERFORMANCE AT HIGHER PACKAGING DENSITIES.
THIS ARTICLE DISCUSSES THE ADVANTAGES AND DISADVANTAGES OF
THIN FILM CHIP NETWORKS. ASPECTS OF HYBRID DESIGN WITH CHIP
NETWORKS AND CHIP DESIGN ARE OUTLINED. SEVERAL HYBRID
CONVERTORS AND AN ACTIVE FILTER ARE DISCUSSED TO ILLUSTRATE
THE THICK FILM/THIN FILM HYBRID COMBINATION (3 Refs)

Descriptors: THIN FILM RESISTORS; THIN FILM CIRCUITS; THICK
FILM RESISTORS; THICK FILM CIRCUITS; HYBRID INTEGRATED
CIRCUITS

Identifiers: HYBRID CIRCUITS; THICK FILM HYBRIDS; TCR;
HYBRID DESIGN; HYBRID CONVERTORS; ACTIVE FILTER; THIN FILM
RESISTOR NETWORKS; THICK FILM RESISTOR NETWORKS; TEMPERATURE
COEFFICIENT OF RESISTANCE
02

Section Class Codes: B2220J, B2220E, B2120

1060733 B77024625
SCREENING PROCEDURE FOR ADHESION DEGRADATION DUE TO SOLDER
LEACHING IN THICK-FILM HYBRID MICROCIRCUITS
LEVIN, S.S.
WESTINGHOUSE ELECTRIC CORP., BALTIMORE, MD. USA
SOLID STATE TECHNOL. (USA) VOL.20, NO.3 39-44 MARCH
1977 Codon: SSTEAP

THE RESULTS OF AN EXPERIMENT TO DETERMINE PRACTICAL
SCREENING AND QUALITY ASSURANCE PROCEDURES TO PRECLUDE
EXCESSIVE ADHESION DEGRADATION, DUE TO SOLDER LEACHING, IN
GOLD ALLOY/SOLDER SYSTEMS IN THICK-FILM HYBRID MICROCIRCUITS
ARE DESCRIBED. THESE RESULTS INCLUDE A COMPARATIVE RATING
AMONG THE MATERIALS TESTED, ALONG WITH CRITERIA FOR RATING
DIFFERENT MATERIALS. FOUR ENVIRONMENTAL STRESSES WERE COMPARED
TO DETERMINE WHICH ONE TO USE AS A QUALITY ASSURANCE TEST FOR
ADHESION DECAY. THE RESULTS ARE PRESENTED TO SHOW THE RELATIVE
DEGRADATIONS OF THE DIFFERENT MATERIALS. BASED ON THE RESULTS
OF THE EXPERIMENT, THE TEMPERATURE CYCLING STRESS APPEARS TO
BE THE MOST PRACTICAL STRESS TO USE AS A SCREENING PROCEDURE
FOR SOLDER LEACHING. GUIDELINES ARE PRESENTED FOR PERFORMING
THE SCREENING TEST AND DETERMINING A RATING FOR ANY MATERIAL
COMBINATION. (7 Refs)

Descriptors: QUALITY CONTROL; THICK FILM CIRCUITS; HYBRID
INTEGRATED CIRCUITS

Identifiers: ADHESION DEGRADATION; SOLDER LEACHING;
PRACTICAL SCREENING; QUALITY ASSURANCE; GOLD ALLOY/SOLDER
SYSTEMS; TEMPERATURE CYCLING STRESS; SCREENING PROCEDURE;
THICK FILM HYBRID MICROCIRCUITS; INTEGRATED CIRCUIT SCREENING

Section Class Codes: B2220J, B0170L, B2220G

1060731 B77024623
HYBRID THICK-LAYER TECHNIQUE IN MICRO ELECTRONICS
POLYTECH. TIJDSCHR. ELEKTROTECH. ELEKTRON. (NETHERLANDS)
VOL.12, NO.4 201-4 APRIL 1977 Codon: PTEBR
COMPARES HYBRID THICK-LAYER TECHNIQUES WITH THIN-LAYER ONES
AND MONOLITHIC INTEGRATED CIRCUITS. PRODUCTION METHOD AND
PROPERTIES OF THICK-LAYER CIRCUITS ARE DISCUSSED. THEY ARE
USED IN MEDICAL EQUIPMENT, SPACE TECHNOLOGY, MILITARY
APPARATUS, TELECOMMUNICATIONS, AND CONSUMER GOODS. RELATIVE
COSTS OF HOUSING (CAPSULATING) METHODS ARE TABULATED
Descriptors: INTEGRATED CIRCUIT TECHNOLOGY; THICK FILM
CIRCUITS; THIN FILM CIRCUITS; INTEGRATED CIRCUIT MANUFACTURE;
HYBRID INTEGRATED CIRCUITS
Identifiers: MICRO ELECTRONICS; MONOLITHIC INTEGRATED
CIRCUITS; HYBRID THICK LAYER TECHNIQUES; HYBRID THIN LAYER
TECHNIQUES; CAPSULATION

Section Class Codes: B2220J, B2220G, B2220E
Language: DUTCH

1060595 B77024465

A FAST-RESPONSE DUAL CONTROLLED COMPARATOR EMPLOYING
HYBRID-THIN-FILM CONSTRUCTION
BAHMTIAROV, G.D.; MAURO, V.M.; VAVILOV, V.A.; VENTSEL, G.I.
RADIOTEKHNIKA, MOSKVA (USSR) VOL.31, NO.5 80-4 MAY
1976 Codon: RATEAO
Trans. of: TELECOMMUN. AND RADIO ENG. PART 2 (USA) VOL.31,
NO.5 107-9 MAY 1976 Codon: TREBBS
MODERN TRENDS IN THE DEVELOPMENT OF FAST-RESPONSE
COMPARATORS AND THEIR PARAMETERS ARE DISCUSSED. A DIFFERENTIAL
TYPE OF COMPARATOR EMPLOYING A HYBRID-THIN-FILM CONSTRUCTION
IS DESCRIBED. THE APPLICATION POSSIBILITIES OF COMPARATORS ARE
EXAMINED. (7 Refs)

Descriptors: COMPARATORS (CIRCUITS); HYBRID INTEGRATED
CIRCUITS; THIN FILM CIRCUITS
Identifiers: DUAL CONTROLLED COMPARATOR; HYBRID THIN FILM
CIRCUITS; FAST RESPONSE; DIFFERENTIAL TYPE COMPARATOR

Section Class Codes: B1290, B2220J, B2220E

1052209 B77020582
MASKS FOR PRINTING THICK-FILM CIRCUITS
DUREY, G.C.

SOLIDSTATE PHYS. LAB., DELHI, INDIA
MICROELECTRON. AND RELIAB. (GB) VOL.16, NO.1 69-73
1976 Codon: MCBAS
THICK-FILM CIRCUITS ARE PRINTED ON ALUMINA SUBSTRATES BY
OFF-CONTACT OR CONTACT PRINTING PROCESS THROUGH A CORRECTLY
GENERATED PATTERN ON SCREENS. THE PRESENT PAPER DESCRIBES
THESE AND COMPARES THE VARIOUS TYPES USED FOR PRINTING
THICK-FILM CIRCUITS. THROUGH METAL MASKS ARE SUITABLE FOR FINE
LINE PRINTING. FOR MOST APPLICATIONS SENSITIZED BICHRONATED
EMULSIONS OR DIAZO EMULSIONS CAN BE USED TO GENERATE A MASK
(14 Refs)

Descriptors: THICK FILM CIRCUITS; MASKS; INTEGRATED CIRCUIT
TECHNOLOGY

Identifiers: ALUMINA SUBSTRATES; CONTACT PRINTING;
BICHRONATED EMULSIONS; DIAZO EMULSIONS; MASK; OFF CONTACT
PRINTING; THICK FILM CIRCUITS

Section Class Codes: B2220G

1051272 B77013120, C77011215
COMPUTER-AIDED THERMAL ANALYSIS OF A HYBRID MULTISTAGE
ACTIVE BANDPASS FILTER/AMPLIFIER
COOK, K.D., JR.; KERNS, D.V., JR.; NAGLE, H.T., JR.; SLAGH,
T.D.; RUME, V.W.

DEPT. OF ELECTRICAL ENG., AUBURN UNIV., AUBURN, AL. USA
IEEE TRANS. PARTS, HYBRIDS AND PACKAG. (USA) VOL. PHP-12,
NO. 3, 344-50, DEC. 1976 Coden: IEPHAA

D. DESCRIBES THE THERMAL ANALYSIS OF A HYBRID MICROCIRCUIT TO
BE USED AS A SIGNAL AMPLIFIER AND CONDITIONER FOR AN INFRARED
TRACKING SYSTEM. IT IS THE PURPOSE OF THIS PAPER TO DESCRIBE
THE USE OF COMPUTER-AIDED ANALYSIS TO DETERMINE THE THERMAL
PERFORMANCE OF THE CIRCUIT AND TO PRESENT A COMPUTER-AIDED
APPROACH TO THE THERMAL DESIGN OF HYBRID MICROELECTRONIC
CIRCUITS. THERMAL ANALYSIS AND MEASUREMENTS ARE MADE,
REVEALING THE TEMPERATURE DISTRIBUTION AND POWER-DISSIPATING
CAPABILITY. THESE RESULTS ALSO PROVIDE DESIGN GUIDELINES FOR
THE LAYOUT OF HEAT-DISSIPATING DEVICES SUCH AS AMPLIFIER
CHIPS. PACKAGE CONVECTION AND RADIATION AS WELL AS INTERNAL
HEAT CONDUCTION ARE MODELED USING NODE POINT ANALYSIS.
TEMPERATURE MEASUREMENTS PROVIDE VERIFICATION OF THE THERMAL
MODELS. (5 Refs)

D. DESCRIBES: THICK FILM CIRCUITS; HYBRID INTEGRATED CIRCUITS
; ACTIVE FILTERS; BAND-PASS FILTERS; COMPUTER-AIDED ANALYSIS;
THERMAL ANALYSIS

Identifiers: HYBRID MULTISTAGE ACTIVE BANDPASS
FILTER/AMPLIFIER; SIGNAL AMPLIFIER; THERMAL DESIGN;
TEMPERATURE DISTRIBUTION; COMPUTER AIDED THERMAL ANALYSIS;
SIGNAL CONDITIONER; POWER DISSIPATING CAPABILITY; LAYOUT
DESIGN GUIDELINES

07
Section Class Codes: B1270E, B2220J, B2220G, B1130B, C7410D

1051271 B77013119, C77011214
THE HYBRID INTEGRATION OF A MULTISTAGE ACTIVE BANDPASS
FILTER/AMPLIFIER

COOK, K.D., JR.; KERNS, D.V., JR.; NAGLE, H.T., JR.; SLAGH,
T.D.; RUME, V.W.

DEPT. OF ELECTRICAL ENG., AUBURN UNIV., AUBURN, AL. USA
IEEE TRANS. PARTS, HYBRIDS AND PACKAG. (USA) VOL. PHP-12,
NO. 3, 316-44, DEC. 1976 Coden: IEPHAA

D. DESCRIBES THE FABRICATION, CHARACTERIZATION, AND ANALYSIS OF
A THICK-FILM HYBRID MICROCIRCUIT TO BE USED AS A SIGNAL
AMPLIFIER AND CONDITIONER FOR AN INFRARED TRACKING SYSTEM. THE
ENTIRE CIRCUIT IS INTEGRATED ON A 1 X 2 IN ALUMINA SUBSTRATE
USING THICK-FILM RESISTORS AND CONDUCTORS. SOME CHIP RESISTORS
IN CRITICAL LOCATIONS, CHIP CAPACITORS, AND MONOLITHIC
OPERATIONAL-AMPLIFIER CHIPS. THE AUTHORS SHOW A BLOCK DIAGRAM
OF THE ENTIRE CIRCUIT. THE TRANSFER FUNCTIONS OF EACH OF THE
STAGES IS DERIVED. THE PREDICTED GAIN PEAK AND THE SHAPE OF
THE MEASURED BANDPASS AGREE WELL WITH EXPERIMENTAL RESULTS.
THE COMPUTER SIMULATION USING AN OP-AMP 'MACROMODEL' GIVES
RESULTS VERY CLOSELY RESEMBLING THE MEASURED BANDPASS.
DOMINANT SOURCES OF NOISE IN THE AMPLIFIER/FILTER AND

LOW-NOISE DESIGN CONSIDERATIONS ARE DISCUSSED. (7 Refs)
Descriptive: THICK FILM CIRCUITS; HYBRID INTEGRATED CIRCUITS
; ACTIVE FILTERS; BAND-PASS FILTERS; CIRCUIT ANALYSIS;
COMPUTING

Identifiers: MULTISTAGE ACTIVE BANDPASS FILTER/AMPLIFIER;
FABRICATION; ANALYSIS; SIGNAL AMPLIFIER; 1 X 2 IN ALUMINA
SUBSTRATE; CHIP RESISTORS; CHIP CAPACITORS; BLOCK DIAGRAM;
TRANSFER FUNCTIONS; PREDICTED GAIN PEAK; MEASURED BANDPASS;
EXPERIMENTAL RESULTS; COMPUTER SIMULATION; NOISE SOURCES;
OPERATIONAL AMPLIFIER; MACROMODEL; THICK FILM RESISTORS;
CHARACTERISATION; THICK FILM CIRCUITS; SIGNAL CONDITIONER;
MONOLITHIC OPERATIONAL AMPLIFIER CHIPS

02
Section Class Codes: B1270E, B2220J, B2220G, B1130B, C7410D

1049332 A77040624, B77016657
CHARACTERIZATION OF METAL-OXIDE SYSTEMS BY HIGH RESOLUTION
ELECTRON SPECTROSCOPY

SCHUBERT, E.J.; HICKLIN, W.H.
GEORGIA INST. OF TECHNOLOG., ATLANTA, GA. USA
US ARMY

PROCEEDINGS OF THE 30TH ANNUAL SYMPOSIUM ON FREQUENCY
CONTROL 240-8 1976

2-4 JUNE 1976 ATLANTIC CITY, N.J., USA
ELECTRONIC INDUSTRIES ASSOC. WASHINGTON, D.C., USA
THE RESEARCH DESCRIBED IS DIRECTED TOWARDS A KNOWLEDGE OF
THE CHEMICAL REACTIONS THAT TAKE PLACE BETWEEN A REACTIVE
METAL ELECTRODE AND THE QUARTZ CRYSTAL SYSTEMS INCLUDED IN
THE DISCUSSION ARE THE METAL-OXIDE SYSTEM, AL-AL/SUB 2/O/SUB
3/, AND THE SYSTEM INVOLVING ALUMINUM AND A GROWN SILICON
DIOXIDE FILM ON SILICON. HIGH ENERGY RESOLUTION AUGER ELECTRON
AND X-RAY PHOTOELECTRON SPECTRA OBTAINED USING A DOUBLE-PASS
CYLINDRICAL MIRROR ANALYZER WITH RETARDING GRIDS ARE
PRESENTED. THE INTENSITIES AND SHAPES OF AUGER AND
PHOTOELECTRON PEAKS FOR THE METAL AND ITS OXIDE ARE EXAMINED
ANALYTICALLY. CHEMICAL SHIFT INFORMATION FOR THE DIFFERENT
METAL-OXIDE SYSTEMS PROVIDES A MEANS FOR THE IDENTIFICATION OF
INTERMEDIATE SOLID PHASES AT METAL-OXIDE INTERFACES. POTENTIAL
APPLICATIONS TO THE STUDY OF INTERFACES IN QUARTZ RESONATORS,
CHARGE COUPLED DEVICES, SURFACE ACOUSTIC WAVE DEVICES AND
HYBRID MICROCIRCUITS ARE MENTIONED. (20 Refs)

Descriptive: CRYSTAL RESONATORS; ELECTRON SPECTROSCOPY;
AUGER EFFECT; CHEMICAL SHIFT; METAL-INSULATOR BOUNDARIES;
INTEGRATED CIRCUIT TESTING

Identifiers: HIGH RESOLUTION ELECTRON SPECTROSCOPY; CHEMICAL
REACTIONS; REACTIVE METAL ELECTRODE; QUARTZ CRYSTAL; X-RAY
PHOTOELECTRON SPECTRA; CHARGE COUPLED DEVICES; SURFACE
ACOUSTIC WAVE DEVICES; HYBRID MICROCIRCUITS; METAL/OXIDE
SYSTEM CHARACTERISATION; AUGER ELECTRON SPECTRA; CHEMICAL
SHIFT

06
Section Class Codes: A82R0P, B0590, B2860

1040082 A77039171, B77016834
A HYBRID INTEGRATED MONOLITHIC CRYSTAL FILTER
OHINO, K.; WATANABE, T.
NIPPON ELECTRIC CO. LTD., KAWASAKI CITY, KANAGAWA, JAPAN
US ARMY
PROCEEDINGS OF THE 30TH ANNUAL SYMPOSIUM ON FREQUENCY
CONTROL 109-18 1976
2-4 JUNE 1976 ATLANTIC CITY, N.J., USA
ELECTRONIC INDUSTRIES ASSOC., WASHINGTON, D.C., USA
THIS CONSISTS OF THIN FILM LUMPED ELEMENT CIRCUIT AND ENERGY
TRAPPED RESONATOR IN INTEGRATED STRUCTURE ON A SUBSTRATE. A
GENERAL DISCUSSION OF THE DESIGN AND FABRICATION IS PRESENTED
(6 Refs)
Descriptors: HYBRID INTEGRATED CIRCUITS; CRYSTAL FILTERS;
INTEGRATED CIRCUIT TECHNOLOGY; THIN FILM CIRCUITS
Identifiers: HYBRID INTEGRATED MONOLITHIC CRYSTAL FILTER;
THIN FILM LUMPED ELEMENT CIRCUIT; ENERGY TRAPPED RESONATOR;
SUBSTRATE; DESIGN; FABRICATION
06
Section Class Codes: A4360, B1270D, B2220J, B2860.

MICROCIRCUIT SUBSTRATES
BUSHMAIRE, O.M.
SANDIA LABS., ALBUQUERQUE, NM, USA
IEEE
14TH ANNUAL PROCEEDINGS RELIABILITY PHYSICS 55-62 1976
20-22 APRIL 1976 LAS VEGAS, NEV., USA
IEEE NEW YORK, USA
THE EFFECTS OF GOLD-ALUMINUM INTERMETALLIC GROWTH WERE
STUDIED. THREE DIFFERENT METALLIZATION SYSTEMS WERE EVALUATED
USING THREE TYPES OF BONDING WIRE, TANTALUM-NITRIDE-CHROMIUM-
GOLD WAS BONDED USING 0.031 MM AL-1PERCENT SI WIRE AND 0.031
MM AL-1PERCENT MG WIRE. THESE TWO WIRE TYPES WERE ALSO BONDED
TO SUBSTRATES METALLIZED WITH TANTALUM-NITRIDE
TITANIUM-PALLADIUM-GOLD. ALSO, GOLD WIRE (0.025 MM) WAS BONDED
TO AL METALLIZATION. THESE METALLIZATION-BOND SYSTEMS WERE
EVALUATED BY SUBJECTING THE TEST SPECIMENS TO VARIOUS MOHAN
TEMPERATURES AND TIME ENVIRONMENTS, FOLLOWED BY LOOP PULL TESTS
TO DESTRUCTION. BOND SHEAR TESTS TO DESTRUCTION, AND
FOUR-POINT PROBE ELECTRICAL RESISTANCE MEASUREMENTS (20
Refs)
Descriptores: HYBRID INTEGRATED CIRCUITS; THIN FILM CIRCUITS;
METALLIZATION; GOLD ALLOYS; ALUMINUM ALLOYS; INTEGRATED
CIRCUIT TESTING
Identifiers: INTERCONNECT STABILITY; THIN FILM HYBRID
MICROCIRCUIT; METALLIZATION SYSTEMS; LOOP PULL TESTS; BOND
SHEAR TESTS; AU-AL INTERMETALLIC GROWTH
06
Section Class Codes: B2220J, B2220E

1043452 B77017047
INVESTIGATION INTO FAILURES OF AL WIRES BONDED TO AU
METALLIZATION IN MICROSUBSTRATES
KUSCHINSKY, R.; ROBINSON, A.I.
WESTINGHOUSE RES. LABS., PITTSBURGH, PA, USA
IEEE
14TH ANNUAL PROCEEDINGS RELIABILITY PHYSICS 75-81 1976
20-22 APRIL 1976 LAS VEGAS, NEV., USA
IEEE NEW YORK, USA
THE MORPHOLOGY AND MICROSTRUCTURAL CHARACTERISTICS WERE
INVESTIGATED BY SEM. ELECTRON PROBE AND AUGER SPECTROSCOPY. IT
IS SHOWN THAT THE ULTRASONIC BONDING CREATES AN INTERACTION
ZONE ABOUT 5 NUM DEEP. LOW BOND STRENGTH AND FAILURE AFTER
H/SUB 2/ SOLDERING CYCLE ARE ATTRIBUTED TO IMPURITIES IN THE
AU WIRING. THESE IMPURITIES FORM BRITTLE INTERMETALLICS WITH AL
AND BRITTLE, EASILY REDUCIBLE, LOW MELTING GLASSES (16
Refs)
Descriptores: THICK FILM CIRCUITS; METALLIZATION; LEAD
BONDING; ULTRASONIC APPLICATIONS; BRITTLINESS; GOLD ALLOYS;
ALUMINUM ALLOYS
Identifiers: AL WIRES; AU METALLIZATION; MICROSUBSTRATES;
MORPHOLOGY; MICROSTRUCTURAL CHARACTERISTICS; SEM; ELECTRON
PROBE; AUGER SPECTROSCOPY; ULTRASONIC BONDING; FAILURE; H/SUB
2/ SOLDERING CYCLE; AU WIRING; IMPURITIES; BRITTLE
INTERMETALLICS
06
Section Class Codes: B2220J, B2550F, B7820, B0530, B2220G,
B2210

1043450 B77017045
GOLD ALUMINUM INTERCONNECT STABILITY ON THIN FILM HYBRID

1043646 B77017041
THICK FILM HYBRID CIRCUITS-WHAT MUST BE DONE TO MEET THE
DEMAND
WHITEHEAD, J.
NEWMARKET TRANSISTORS LTD., NEWMARKET, ENGLAND
ELECTRON. EQUIP. NEWS (GB) 4-5 FEB.-MARCH 1977 Codent
ECONAN
DISCUSSES MANUFACTURING REQUIREMENTS FOR THE EXPECTED
INCREASE IN DEMAND. THE AUTHOR CONSIDERS AUTOMATIC EQUIPMENT
FOR CHIP BONDING AND WIRE BONDING AND THE SUPPLY OF ACTIVE
DEVICES AND ICS IN CHIP OR SLICE FORM
Descriptores: THICK FILM CIRCUITS; HYBRID INTEGRATED CIRCUITS
; INTEGRATED CIRCUIT MANUFACTURE; MICROASSEMBLING; INTEGRATED
CIRCUIT TECHNOLOGY
Identifiers: MANUFACTURING REQUIREMENTS; AUTOMATIC EQUIPMENT
; CHIP BONDING; WIRE BONDING; CHIP/Slice FORM ACTIVE DEVICES;
THICK FILM CIRCUITS; CHIP/Slice ICS; HYBRID INTEGRATED
CIRCUITS; EXPECTED INCREASED DEMAND; IC MANUFACTURE
02
Section Class Codes: B2220J, B2220G, B0170E, B2550

1043641 B77017036
DESIGNING OF THIN-FILM RESISTORS AND AUTOMATIC VALUE
ADJUSTMENT BY THE HELP OF A COMPUTER
HOLLANDUS, J.
FIMONTECH, AND MIKROTECH, (HUNGARY) VOL.15, NO.10 308-11
OCT. 1976 Coden: FIMWAY

VARIOUS MICRO-ENGRAVING METHODS ARE SUITED TO FORM MICR
THIN-FILM RESISTORS IN INTEGRATED HYBRID CIRCUITS ON
INSULATING SUBSTRATE. NUMEROUS ADVANTAGES OF ELECTRON BEAM AND
LASER FOUTHERS ARE, HOWEVER, OFTEN COUNTERBALANCED BY HIGH
INITIAL COSTS. THEREFORE THESE EQUIPMENTS ARE NOT USED WIDELY
IN HUNGARY. MICRO-ENGRAVING BY ELECTRO-EROSION CAN BE WELL
AUTOMATIZED BY A RELATIVELY SIMPLE DRAWMING MACHINE AND A SMALL
COMPUTER. THE QUALITY OF THINNING PERFORMED BY THIS TECHNIQUE
EQUALS, IN THE CASE OF ACCOMPLISHED PRODUCTION TECHNOLOGY,
THAT OF RESISTORS PRODUCED BY THE LASER TECHNIQUE. (5 Refs.)

IDENTIFIERS: THIN FILM RESISTORS; CIRCUIT LAYOUT CAD; HYBRID
INTEGRATED CIRCUITS; THIN FILM CIRCUITS
DESCRIPTORS: MICR; THIN FILM RESISTORS HYBRID INTEGRATED
CIRCUITS; COMPUTER AIDED DESIGN; ELECTROEROSION MICROENGRAVING
METHODS; AUTOMATED TRIMMING

Section Class Codes: B2220E, B2120, B2220J
Language: HUNGARIAN

1043567 B77016950
THICK-FILM 3-STAGE MIC IMPATT-DIODE-AMPLIFIER ON FERRITE
GEMER, R.; RICHMOND, W.; BRADDOCK, P.W.
ROSE, GREAT MALVERN, ENGLAND
ELECTRON. LETT. (GB) VOL.13, NO.7 193-5 31 MARCH 1977
Coden: ELLEAK

A 3-STAGE HYBRID MIC GALLIUM-ARSENIDE IMPATT-DIODE AMPLIFIER
IS DESCRIBED WITH AN OUTPUT OF 1.05 W AT 9.2 GHZ, A
LARGE-SIGNAL GAIN OF 21 DB AND A BANDWIDTH TO -3 DB GREATER
THAN 1 GHZ; THE AMPLIFIER IS STABLE AT ALL INPUT LEVELS. THE
CONCEPT OF AN EFFECTIVE RADIUS, FIRST PROPOSED TO EXPLAIN THE
PROPERTIES OF DISC CAPACITORS, HAS BEEN USED SUCCESSFULLY IN
THE CIRCUITOR DESIGN. CLOSE ATTENTION HAS BEEN PAID TO
SCRIBING THE UNENCAPSULATED DIODES TO PREVENT RF RADIATION
AND TO INCORPORATING RESISTIVE-LOADING CIRCUITS TO SUPPRESS
SPURIOUS OUT-OF-BAND OSCILLATIONS. (5 Refs.)
DESCRIPTORS: IMPATT DIODES; MICROWAVE INTEGRATED CIRCUITS;
MICROWAVE AMPLIFIERS; HYBRID INTEGRATED CIRCUITS; THICK FILM
CIRCUITS

IDENTIFIERS: FERRITE; EFFECTIVE RADIUS; CIRCUITOR DESIGN;
THICK FILM 3-STAGE MIC IMPATT DIODE AMPLIFIER; GAAS DIODE
02

Section Class Codes: B1350F, B2220J, B2220G, B2560H, B1220

1034034 B77013295
THE EFFECTS OF GOLD AND NICKEL PLATING THICKNESSES ON THE
STRENGTH AND RELIABILITY OF THERMOCOMPRESSION-BONDED EXTERNAL

LEADS

PANOUSIS, N.T.; HALL, P.M.
DELL LABS, INC., ALLENTOWN, PA, USA
IEEE TRANS. PARTS, HYBRIDS AND PACKAG. (USA) VOL. PHP-12,
NO.4 202-7 DEC. 1976 Coden: IEPHAA

EXTERNAL LEADS INTENDED FOR THERMOCOMPRESSION (TC) BONDING
TO AU-METALLIZED THIN-FILM CIRCUITS ARE TYPICALLY CO-BASED
ALLOYS PLATED WITH AU OR A COMBINATION OF NI AND AU. THE
OBJECTIVE OF THIS WORK WAS AN EVALUATION OF THE NI/AU SYSTEM
TO DETERMINE THE OPTIMUM PLATING THICKNESSES FOR RELIABLE TC
BONDING. ALSO INVESTIGATED WAS THE MINIMUM AU THICKNESS
NECESSARY FOR TC BONDING WHEN THE NI DIFFUSION BARRIER WAS
OMITTED. FOUR CRITERIA WERE EVALUATED: INITIAL BONDABILITY;
BOND STRENGTH AFTER ACCELERATED AGING; SUSCEPTIBILITY TO
CRACKING IN A 90 DEGREES BEND TEST; AND FATIGUE BEHAVIOR. THE
TEST VEHICLE WAS A 32-LEAD DUAL-IN-LINE PACKAGE UTILIZING
ALUMINA SUBSTRATES METALLIZED WITH TI/PD/AU FILMS AND CU LEAD
FRAMES (CDA 102 AND 110) ELECTROPLATED WITH NI AND AU IN THE
RANGES OF 0-41 MM AND 0.4-20 MM, RESPECTIVELY (0-1630 AND
15-780 MUIN, RESPECTIVELY) (7 Refs.)
DESCRIPTORS: HYBRID INTEGRATED CIRCUITS; THIN FILM CIRCUITS;
RELIABILITY; LEAD BONDING; ALUMINIUM
IDENTIFIERS: RELIABILITY; OPTIMUM PLATING THICKNESSES;
INITIAL BONDABILITY; BOND STRENGTH; BEND TEST;
THERMOCOMPRESSION BONDED EXTERNAL LEADS; AU PLATING THICKNESS;
FATIGUE BEHAVIOR; NI PLATING THICKNESS; 32 LEAD DIL PACKAGE;
AU METALLIZED THIN FILM CIRCUITS BONDING

02
Section Class Codes: B2240, B2220J, B0170N, B2220E

1034036 B77013293
THICK-FILM HYBRID MICROCIRCUITS

HETHERINGTON, D.R.
NEWMARKET TRANSISTORS LTD., NEWMARKET, ENGLAND
MUNDO ELECTRON. (SPAIN) NO.58 63-6 DEC. 1976 Coden:
MUELGN

REVIEWS THE DESIGN AND MANUFACTURE OF THICK-FILM HYBRID
MICROCIRCUITS AND APPLICATIONS IN MEDICINE, INDUSTRIAL AND
CONSUMER PRODUCTS. MILITARY AND SPACE APPARATUS, MOTOR
VEHICLES AND TELECOMMUNICATIONS
DESCRIPTORS: HYBRID INTEGRATED CIRCUITS; THICK FILM CIRCUITS
; INTEGRATED CIRCUIT MANUFACTURE
IDENTIFIERS: DESIGN; MANUFACTURE; APPLICATIONS; THICK FILM
CIRCUITS; HYBRID ICs

02
Section Class Codes: B2220J, B2220G
Language: SPANISH

1034035 B77013292
MANUFACTURING PROCESS FOR HYBRID MICROCIRCUITS CONTAINING METALLIZED VIAS
BENTON, D.; LAUREL, A.; BLESSNER, P.
BENTON CORP., KANSAS CITY, MO, USA
IEEE TRANS., PARTS, HYBRIDS AND PACKAG. (USA) VOL. PHP-12, NO. 4 323-35 DEC. 1976

IDENTIFIERS: ADJACENT CONDUCTORS; MICROWAVE ICS; MICROSTRIP; WIGGLY PHASE SHIFTER; WIGGLY DIRECTIONAL COUPLER; IC DIRECTIONAL COUPLERS; WIGGLY CONDUCTOR EDGE GEOMETRY; 20 PER CENT SPACE SAVING; DISPERSION REDUCTION TECHNIQUES; NONDISPERSIVE PHASE SHIFTERS; NONDISPERSIVE DIRECTIONAL COUPLERS

02

Section Class Codes: B2220J, B2220E, B1320, B1290, B1350F

1034033 B77013290
THIN-FILM MICROWAVE INTEGRATED CIRCUITS
AMAMATI, V.S.; BILIER, J.S.; PEARMAN, A.; SHIFFLETT, C.C.
BELL TELEPHONE LABS., INC., NORTH ANDOVER, MA, USA
IEEE TRANS., PARTS, HYBRIDS AND PACKAG. (USA) VOL. PHP-12, NO. 4 303-16 DEC. 1976

IDENTIFIERS: ADJACENT CONDUCTORS; MICROWAVE ICS; MICROSTRIP; WIGGLY PHASE SHIFTER; WIGGLY DIRECTIONAL COUPLER; IC DIRECTIONAL COUPLERS; WIGGLY CONDUCTOR EDGE GEOMETRY; 20 PER CENT SPACE SAVING; DISPERSION REDUCTION TECHNIQUES; NONDISPERSIVE PHASE SHIFTERS; NONDISPERSIVE DIRECTIONAL COUPLERS

02

Section Class Codes: B2220J, B2220E, B1320, B1290, B1350F

1034034 B77013291
THIN-FILM MICROSTRIP WIGGLY PHASE SHIFTERS AND DIRECTIONAL COUPLERS FOR RADIO-FREQUENCY HYBRID-MICROCIRCUIT APPLICATIONS
TAYLOR, J.L.; PRIGEL, D.D.
DYNALX CORP., KANSAS CITY, MO, USA
IEEE TRANS., PARTS, HYBRIDS AND PACKAG. (USA) VOL. PHP-12, NO. 4 317-23 DEC. 1976

IDENTIFIERS: ADJACENT CONDUCTORS; MICROWAVE ICS; MICROSTRIP; WIGGLY PHASE SHIFTER; WIGGLY DIRECTIONAL COUPLER; IC DIRECTIONAL COUPLERS; WIGGLY CONDUCTOR EDGE GEOMETRY; 20 PER CENT SPACE SAVING; DISPERSION REDUCTION TECHNIQUES; NONDISPERSIVE PHASE SHIFTERS; NONDISPERSIVE DIRECTIONAL COUPLERS

02

Section Class Codes: B2220J, B2220E, B1320, B1290, B1350F

1034036 B77013293
THIN-FILM MICROWAVE INTEGRATED CIRCUITS
AMAMATI, V.S.; BILIER, J.S.; PEARMAN, A.; SHIFFLETT, C.C.
BELL TELEPHONE LABS., INC., NORTH ANDOVER, MA, USA
IEEE TRANS., PARTS, HYBRIDS AND PACKAG. (USA) VOL. PHP-12, NO. 4 303-16 DEC. 1976

IDENTIFIERS: ADJACENT CONDUCTORS; MICROWAVE ICS; MICROSTRIP; WIGGLY PHASE SHIFTER; WIGGLY DIRECTIONAL COUPLER; IC DIRECTIONAL COUPLERS; WIGGLY CONDUCTOR EDGE GEOMETRY; 20 PER CENT SPACE SAVING; DISPERSION REDUCTION TECHNIQUES; NONDISPERSIVE PHASE SHIFTERS; NONDISPERSIVE DIRECTIONAL COUPLERS

02

Section Class Codes: B2220J, B2220E, B1320, B1290, B1350F

1034032 B77013289
A TECHNOLOGY OF THIN-FILM HYBRID MICROWAVE CIRCUITS
CURRAN, J.E.; JEANES, R.V.; SEWELL, H.
TECHNOL. DEPT., MULLARD RES. LABS., REDHILL, ENGLAND
THREE TRANS. PARTS, HYBRIDS AND PACKAG. (USA) VOL.PHP-12.
NO.4 306-9 DEC. 1976 CODES: IEPHAA
DESCRIBES THE VARIOUS THIN-FILM PROCESSES THAT ARE BEING
USED TO PRODUCE MICROWAVE INTEGRATED CIRCUITS. BOTH MICROSTRIP
AND STRIP LINE SYSTEMS. THE TECHNOLOGIES DESCRIBED INVOLVE
A COMBINATION OF VACUUM EVAPORATION OR RF SPUTTERING.
PHOTOLITHOGRAPHIC, ELECTROCHEMICAL, AND MICROBONDING PROCESSES.
USED IN SEQUENCE TO ACHIEVE INTEGRATED RESISTOR, CAPACITOR,
AND CONDUCTOR NETWORKS. STABLE THIN-FILM INTEGRATED
NICKEL-CHROMIUM RESISTORS ARE ACHIEVED WITH GOOD MICROWAVE
BEHAVIOR. THE USUAL CONDUCTOR AND INTERDIGITAL CAPACITOR
SYSTEMS ARE GOLD WITH EITHER NICKEL-CHROMIUM OR TITANIUM
UNDERLAY. THE MICROWAVE CIRCUITS ARE PRODUCED ON A VARIETY OF
SUBSTRATES WHICH INCLUDE ALUMINA, FERRITE, QUARTZ, AND
SAPPHIRE (4 Refs)
Descriptores: MICROWAVE INTEGRATED CIRCUITS; HYBRID
INTEGRATED CIRCUITS; THIN FILM CIRCUITS; INTEGRATED CIRCUIT
TECHNOLOGY; THIN FILM RESISTORS; THIN FILM CAPACITORS;
PHOTOLITHOGRAPHY; STRIP LINES
Identifiers: MICROWAVE INTEGRATED CIRCUITS; LUMPED ELEMENT
SYSTEMS; VACUUM EVAPORATION; RF SPUTTERING; MICROBONDING
PROBLEMS; INTERDIGITAL CAPACITOR SYSTEMS; SUBSTRATES; THIN
FILM CIRCUITS; THIN FILM PROCESSES; HYBRID ICS; MICROSTRIP
SYSTEMS; PHOTOLITHOGRAPHY; ELECTROCHEMICAL PROCESSES; RESISTOR
CAPACITOR CONDUCTOR NETWORKS; NI-CR RESISTORS; CHARACTERISTICS
02
Section Class Codes: B2220J, B2220E, B1350F

1034031 B77013288
FAILURE MODES OF BEAM-LEAD SEMICONDUCTORS IN THIN-FILM
HYBRID MICROCIRCUITS
SCAFFORD, J.M.
FILE TRANS. PARTS, HYBRIDS AND PACKAG. (USA) VOL.PHP-12.
NO.4 306-9 DEC. 1976 CODES: IEPHAA
BEAM-LEAD SEMICONDUCTOR AND PASSIVE
UTILIZED IN HYBRID MICROCIRCUITS (HMC) TO PROVIDE HIGHER
RELIABILITY. THIS IS DERIVED FROM THE BEAM-LEAD DEVICE'S
IMPROVED BONDING INTEGRITY PLUS THE SILICON NITRIDE COATING
WHICH REDUCES SENSITIVITY TO CONTAMINANTS. HOWEVER, THEIR SIZE
REQUIRES SPECIAL HANDLING TECHNIQUES TO PREVENT HANDLING
DAMAGE. OTHER FAILURE MODES EXIST SUCH AS CRACKED NITRIDE
PINHOLES IN THE NITRIDE, INADEQUATE PLATING, AND SWEATED
METALLIZATION. AFTER TWO YEARS OF PRODUCTION USAGE, TOTALING
APPROXIMATELY 150000 DEVICES, THE BENDIX CORPORATION'S MAINS
CITY DIVISION HAS COMPILED SIGNIFICANT DATA ON BEAM-LEAD
DEVICES INCLUDING SMALL-SIGNAL AND POWER DISCRETE
SEMICONDUCTORS AND DIGITAL INTEGRATED CIRCUITS. THESE FAILURE
MODES ARE CHARACTERIZED AND PRECAUTIONARY MEASURES ARE
DESCRIBED TO MINIMIZE FAILURES IN HMC USAGE (12 Refs)
Descriptores: HYBRID INTEGRATED CIRCUITS; BEAM-LEAD DEVICES;
FAILURE ANALYSIS
Identifiers: PASSIVE DEVICES; HYBRID MICROCIRCUITS; HANDLING
DAMAGE; POWER DISCRETE SEMICONDUCTORS; DIGITAL INTEGRATED
CIRCUITS; FAILURE MODES; PRECAUTIONARY MEASURES; SMALL SIGNAL
DISCRETE TRANSISTORS; BEAM LEAD DEVICES; THIN FILM HYBRID ICS
02
Section Class Codes: B2220J, B0170N

1034036 B77013283
AGING CHARACTERISTICS OF ALUMINUM WIRE BONDS ON THICK FILM
PLATINUM-SILVER METALLIZATION
KOTOHOLA INC., FT. LAUDERDALE, FL, USA
INSUL./CIRCUITS (USA) VOL.23, NO.2 23-4 FEB. 1977
CODES: ISCUBF
THICK FILM CONDUCTOR MATERIALS ARE SELECTED FOR HYBRID
APPLICATIONS ON THE BASIS OF COST AND PERFORMANCE. THE RISING
COST OF GOLD IN RECENT YEARS, HOWEVER, HAS LED TO THE
DEVELOPMENT OF PLATINUM-SILVER FORMULATIONS WHICH SHOW GREAT
PROMISE AS VIABLE LOW-COST ALTERNATIVES TO GOLD.
PALLADIUM-SILVER, AND PLATINUM-GOLD CONDUCTOR MATERIALS. THIS
ARTICLE DESCRIBES THE AGING CHARACTERISTICS OF ALUMINUM WIRE
BONDS ON PLATINUM-SILVER METALLIZATION (6 Refs)
Descriptores: LEAD BONDING; THICK FILM CIRCUITS;
METALLISATION; AGEING; ALUMINIUM
Identifiers: HYBRID APPLICATIONS; COST; PERFORMANCE; AGEING
CHARACTERISTICS; THICK FILM CONDUCTORS; AL WIRE BONDS; THICK
FILM Pt-Ag METALLISATION
02
Section Class Codes: B2220G, B2240

1034037 B77013284
AGING CHARACTERISTICS OF ALUMINUM WIRE BONDS ON THIN FILM
PLATINUM-SILVER METALLIZATION
KOTOHOLA INC., FT. LAUDERDALE, FL, USA
INSUL./CIRCUITS (USA) VOL.23, NO.2 23-4 FEB. 1977
CODES: ISCUBF
THICK FILM CONDUCTOR MATERIALS ARE SELECTED FOR HYBRID
APPLICATIONS ON THE BASIS OF COST AND PERFORMANCE. THE RISING
COST OF GOLD IN RECENT YEARS, HOWEVER, HAS LED TO THE
DEVELOPMENT OF PLATINUM-SILVER FORMULATIONS WHICH SHOW GREAT
PROMISE AS VIABLE LOW-COST ALTERNATIVES TO GOLD.
PALLADIUM-SILVER, AND PLATINUM-GOLD CONDUCTOR MATERIALS. THIS
ARTICLE DESCRIBES THE AGING CHARACTERISTICS OF ALUMINUM WIRE
BONDS ON PLATINUM-SILVER METALLIZATION (6 Refs)
Descriptores: LEAD BONDING; THICK FILM CIRCUITS;
METALLISATION; AGEING; ALUMINIUM
Identifiers: HYBRID APPLICATIONS; COST; PERFORMANCE; AGEING
CHARACTERISTICS; THICK FILM CONDUCTORS; AL WIRE BONDS; THICK
FILM Pt-Ag METALLISATION
02
Section Class Codes: B2220G, B2240

1033890 B77013118
TANTALUM THIN-FILM RC CIRCUIT TECHNOLOGY FOR A UNIVERSAL
ACTIVE FILTER
WORMBEY, W.; RUTKIEWICZ, J.
BELL LABS. INC., ALLENSTOWN, PA, USA
IEEE TRANS. PARTS, HYBRIDS AND PACKAG. (USA) VOL. PHP-12,
NO. 4 276-82 DEC. 1976 Codon: IEPHAG
DESCRIBES THE PHYSICAL LAYOUT, PROCESS SEQUENCE, AND
COMPONENT PROPERTIES OF A UNIVERSAL ACTIVE FILTER DESIGNED
THE STANDARD TANTALUM ACTIVE RESONATOR (STAR). THIS
ACTIVE-FILTER BUILDING BLOCK WAS REALIZED AS A HYBRID
INTEGRATED CIRCUIT (HIC). SEVERAL DIFFERENT CIRCUIT
CONFIGURATIONS ARE POSSIBLE, USING ONLY ONE SET OF PROCESS
PHOTOGRAPHS AND ONE HIC. THIS CAN BE ACCOMPLISHED BY A WIDE
RANGE OF PRECISE RESISTOR VALUES THROUGH THE USE OF LASER
TRIMMING AND VARIOUS INTERCONNECTING SCHEMES FOR THE
CIRCUITS ON THE HIC VIA THE PRINTED WIRING BOARD. THE STAR
THIN-FILM RESISTORS, TWO 5100-PF TANTALUM CAPACITORS, AND ONE
OPERATIONAL AMPLIFIER, THE SINGLE-SUBSTRATE RC PROCESS IS
APPLICABLE TO BATCH PROCESSING AND PRECISION TUNING AND CAN BE
FABRICATED ON A 16-PIN DUAL-IN-LINE PACKAGE (15 Refs.)
D. CODONS: ACTIVE FILTERS; THIN FILM CIRCUITS; THIN FILM
CAPACITORS; THIN FILM RESISTORS; HYBRID INTEGRATED CIRCUITS;
TANTALUM; LASER BEAM APPLICATIONS
Identifiers: UNIVERSAL ACTIVE FILTER; PHYSICAL LAYOUT;
PROCESS SEQUENCE; STAR; HYBRID INTEGRATED CIRCUIT; LASER
TRIMMING; INTERCONNECTING SCHEMES; BATCH PROCESSING; PRECISION
TUNING; STANDARD T ACTIVE RESONATOR; 1A THIN FILM RC CIRCUIT
TECHNOLOGY; 5100 PF TA CAPACITORS; 16 PIN DIL PACKAGE
02
Section Class Codes: B1270E, B2220E, B2220J, B2130, B4360,
B2120

1033787 B77012901
DIFFERENTIAL INSTRUMENTATION AMPLIFIER
RISHIN, J.
ANALOG DEVICES INC., NORWOOD, MA, USA
ANALOG DIALOGUE (USA) VOL. 10, NO. 2 9 1976 Codon:
ANDIOX
THE AD522 DIFFERENTIAL INSTRUMENTATION AMPLIFIER, DESIGNED
FOR APPLICATIONS REQUIRING HIGH PRECISION UNDER
LESS-THAN-IDEAL OPERATING CONDITIONS, MULTIPLIES THE
DIFFERENCE BETWEEN TWO INPUT VOLTAGES BY A FIXED GAIN, FROM 1
TO 1000, DETERMINED BY A SINGLE EXTERNAL RESISTANCE. BUILT ON
A PRECISION THIN-FILM SUBSTRATE IN A HERMETIC OIL PACKAGE, IT
COMBINES MODULE-LIKE PERFORMANCE WITH IC-LIKE SMALL SIZE, LOW
COST AND PINOUT SIMILAR TO THAT OF THE MONOLITHIC AD521.
D. CODONS: DIFFERENTIAL AMPLIFIERS; HYBRID INTEGRATED
CIRCUITS; THIN FILM CIRCUITS
Identifiers: DIFFERENTIAL INSTRUMENTATION AMPLIFIER; FIXED
GAIN; HERMETIC OIL PACKAGE; PERFORMANCE; SIZE; COST; PINOUT;
THIN FILM HYBRID IC
02

Section Class Codes: B1220, B2220J, B2220E

1010517 A77011154, B77006428
THE RHEOLOGICAL CONTROL OF PASTES TO DETERMINE THEIR
SUITABILITY FOR SERIGRAPHICAL APPLICATIONS
DAUDRY, H.
ELECTRON. AND MICROELECTRON. IND. (FRANCE) NO. 226 38-41
15 OCT. 1976 Codon: ENCLAS
REVIEWS AVAILABLE DATA FOR THICK FILM ICS INCLUDING PAINTS.
IT IS ESSENTIAL THAT THE VISCOSITY OF A PASTE SHOULD BE SUCH
AS TO ENSURE ITS CLEAR TRANSIT THROUGH A SELECTED SCREEN AND,
AFTER ITS DEPOSITION ON THE SUBSTRATE, BE ABLE TO FORM A
CONTINUOUS AND UNIFORM FILM. THE BASIS OF RHEOLOGY IS TO STUDY
THE FLOW OR DEFORMATIONS WHICH THE PASTES, UNDER THE STRESSES
TO WHICH THEY ARE SUBJECTED DURING A SERIGRAPHIC PROCESS,
UNDERGO. THE SERIGRAPHIC PROCESS IS DESCRIBED AND SPECIFIC
TERMS USED ARE DEFINED AND INDICATED ON A TYPICAL VISCOSITY
CURVE. THE METHODS USED IN MEASURING VISCOSITY ARE DESCRIBED
AND A BLOW-SCHEMATIC IS SHOWN OF A COMPONENTS ASSEMBLY OF A
ROTARY VISCOMETER. A SERIES OF CURVES ARE ALSO SHOWN
ILLUSTRATING THE FLOW BEHAVIOUR OF A NUMBER OF SUBSTANCES
UNDER SPECIFIED CONDITIONS (14 Refs.)
Descriptons: THICK FILM CIRCUITS; RHEOLOGY
Identifiers: THICK FILM CIRCUITS; ROTARY VISCOMETER; FLOW
BEHAVIOUR; THICK FILM CIRCUITS; THICK FILM PASTE
CHARACTERISTICS; SCREEN PRINTING
02
Section Class Codes: A4660, B2220G

1008506 B77007522
THICK-FILM CIRCUITS FOR SETTING THE FOCUS VOLTAGE IN COLOUR
TELEVISION RECEIVERS
THIEL, E.
FUNKSCHAU (GERMANY) VOL. 48, NO. 24 1049-50 19 NOV. 1976
Codon: FUSHA2
USES EXAMPLES TO ILLUSTRATE THAT PRACTICALLY ALL THE
REQUIREMENTS FOR REGULATING FOCUSING CAN BE MET USING
THICK-FILM TECHNIQUES (BUT AS YET NO STANDARDISATION HAS TAKEN
PLACE). SOME OF THE EXAMPLES DESCRIBED ARE: 8 KV FIXED
RESISTORS, 2 KV TRIMMER, ROD REGULATOR, AND 51 HV CASCADE
BLEEDER.
D. CODONS: THICK FILM CIRCUITS; COLOUR TELEVISION
RECEIVERS; POWER SUPPLIES TO APPARATUS
Identifiers: SETTING THE FOCUS VOLTAGE; COLOUR TELEVISION
RECEIVERS; 8 KV FIXED RESISTORS; 2 KV TRIMMER; ROD REGULATOR;
51 HV CASCADE BLEEDER; THICK FILM CIRCUITS
02
Section Class Codes: B64200, B2220G, B1210
Language: GERMAN

1007705 B77006432
RELIABILITY OF THIN FILM CONDUCTORS AND AIR GAP CROSSOVERS
FOR HYBRID CIRCUITS' TESTS, RESULTS AND DESIGN CRITERIA
PIACENTINI, G.F.; MINELLI, G.
TELETTIPRA, VIMERCATE, ITALY
MICROELECTRON. AND RELIAB. (GB) VOL.15, NO.5 451-8
1976. Coden: MCLRAS

PRESENTS THE RESULTS OF A LONG-TERM STUDY ON THE RELIABILITY
OF THIN FILM CONDUCTORS AND CROSSOVERS METALLISATION FOR
HYBRID CIRCUITS. THREE FAILURE MECHANISMS ARE EXAMINED:
ELECTROMIGRATION, HUMIDITY CORROSION AND MECHANICAL FATIGUE,
WHICH AFFECT THE COMPLEX HYBRID CIRCUITS AS A CONSEQUENCE OF
THE CURRENT LOAD, OF THE HUMIDITY AND THE ELECTRICAL LOAD AND
OF THE MECHANICAL STRESSES INDUCED BY THE ENCAPSULATION. FOR THE
HUMIDITY CORROSION A NEW GENERAL QUANTITATIVE FORMULATION IS
PROPOSED WHICH RELATE TEMPERATURE, POLARISATION AND ION WITH
MEDIUM TIME TO FAIL. THE AGREEMENT BETWEEN THE PROPOSED
FORMULATION AND THE RESULTS IS VERIFIED BOTH ON UNENCAPSULATED
AND ON ENCAPSULATED COMPONENTS AND GIVE AN ACTIVATION ENERGY
FOR NiCr-AU OR TiPdAu MATERIALS OF $\rho H = 0.53$ EV. FINALLY, SOME
CAUTELATIVE DESIGN RULES ARE PROPOSED IN ORDER TO HAVE AN
ACCEPTABLE RELIABILITY LEVEL FROM THE DESIGN (10 Refs)

Descriptons: THIN FILM CIRCUITS; HYBRID INTEGRATED CIRCUITS;
RELIABILITY; FAILURE ANALYSIS; METALLISATION; INTEGRATED
CIRCUIT TECHNOLOGY; DESIGN ENGINEERING
Identifiers: THIN FILM CONDUCTORS; AIR GAP CROSSOVERS;
HYBRID CIRCUITS; DESIGN CRITERIA; RELIABILITY; FAILURE
MECHANISMS; ELECTROMIGRATION; HUMIDITY CORROSION; MECHANICAL
FATIGUE; ENCAPSULATED COMPONENTS; CAUTELATIVE DESIGN RULES;
LONG-TERM TESTS; RESULTS; THIN FILM CIRCUITS; GENERALISED
FAILURE TIME EQUATIONS; MEAN TIME TO FAIL; FAILURE MODES;
UNENCAPSULATED COMPONENTS; NiCr-AU METALLISATION SYSTEM;
TiPdAu METALLISATION SYSTEM; EXPERIMENTAL RESULTS
02

Section Class Codes: B2220J, B2220E, B0170H, B0170C

1007703 B77006429
THICK-FILM CIRCUITS IN RADIOS AND TELEVISIONS
KIMATH, M.; LOOSE, H.
FIRMSCHAU (GERMANY) VOL.48, NO.24 1047-8 19 NOV. 1976

BRIEFLY DESCRIBES BLAUPUNKT'S USE OF THICK-FILM CIRCUITS IN
THEIR COLOUR TV RECEIVER (COLOR FM 100)-E.G. TO FORM THE
RESISTOR NETWORK FOR THE ULTRASONIC REMOTE CONTROL-AND THE USE
OF SUCH CIRCUITS IN CAR RADIOS (E.G. THE MAINZ CR)
Descriptons: THICK FILM CIRCUITS; RADIO RECEIVERS;
TELEVISION RECEIVERS
Identifiers: BLAUPUNKT; RESISTOR NETWORK; ULTRASONIC REMOTE
CONTROL; THICK FILM CIRCUITS; RADIO RECEIVERS; TV RECEIVERS
02

Section Class Codes: B2220G, B5420D

1007693 B77006330
INTEGRATED VOLTAGE DIVIDERS WITH CORRELATED RESISTOR
TOPOLOGY
MARKOSYAN, E.G.; ALEKSANYAN, R.G.
RADIOOTEKHNIKA, MOSKVA (USSR) VOL.31, NO.2 99-100 FEB.
1977 Coden: RATEAD

Trans. of: TELECOMMUN. AND RADIO ENG. PT. 2 (USA) VOL.31,
NO.2 125-6 FEB. 1977 Coden: TREFBS
FACTORS INFLUENCING THE CORRELATION COUPLINGS BETWEEN THE
PARAMETERS OF INTEGRATED CIRCUIT COMPONENTS ARE DISCUSSED.
ERRORS IN THE TRANSFER FACTOR OF AN INTEGRATED VOLTAGE DIVIDER
ARE ANALYSED. VERSIONS REALISING PERFECT DIVIDERS ARE
PRESENTED (1 Refs)

Descriptons: VOLTAGE DIVIDERS; THIN FILM CIRCUITS
Identifiers: CORRELATED RESISTOR TOPOLOGY; CORRELATION
COUPLINGS; INTEGRATED CIRCUIT COMPONENTS; TRANSFER FACTOR;
INTEGRATED VOLTAGE DIVIDER
02

Section Class Codes: B1290, B2220E

1000708 B77004605
THIN-FILM VIDEO SCANNER AND DRIVER CIRCUIT FOR SOLID-STATE
FLAT PANEL DISPLAYS
GREENEICH, E.W.

WESTINGHOUSE RES. LABS., PITTSBURGH, PA, USA
SOC. INFORMATION DISPLAY, IEEE
1976 BIENNIAL DISPLAY CONFERENCE 16-19 1976
12-14 OCT. 1976 NEW YORK, USA
IEEE NEW YORK, USA

A THIN-FILM SCANNER CIRCUIT WHICH GREATLY REDUCES THE NUMBER
OF EXTERNAL LEAD CONNECTIONS TO A LARGE AREA FLAT PANEL
DISPLAY, WHILE AT THE SAME TIME PROVIDING BOTH THE SCANNING
(ADDRESSING) FUNCTION AND THE VIDEO DRIVER FUNCTION, HAS BEEN
SUCCESSFULLY FABRICATED. THE CIRCUIT, WHICH CAN HANDLE BOTH TV
(ANALOGUE) AND ALPHA-NUMERIC (DIGITAL) TYPE VIDEO, ALSO
PERFORMS LINE STORAGE SO THAT THE INCOMING SERIAL VIDEO CAN BE
PRESENTED TO THE DISPLAY PANEL IN LINE-AT-A-TIME FASHION (3
Refs)

Descriptons: DISPLAY DEVICES; THIN FILM CIRCUITS
Identifiers: LARGE AREA FLAT PANEL DISPLAY; VIDEO DRIVER
FUNCTION; LINE STORAGE; ADDRESSING FUNCTION; THIN FILM SCANNER
CIRCUIT
06

Section Class Codes: B7260, B2220E

999033 877003305
MICROWAVE INTEGRATED CIRCUIT TECHNIQUES
OALLEY, T.H.
CENTRAL RES. LAB., GEC LTD., WEMBLEY, ENGLAND
GEC J. SCI. AND TECHNOL. (GB) VOL.43, NO.1 21-31 1978
Coden: GUSTAG
DESCRIBES THE RANGE OF TECHNOLOGIES AND DETAILS THE
PREFERRED DESIGN APPROACH UTILIZING THIN-FILM/OPEN-MICROSTRIP-
/HYBRID TECHNIQUES. CONSIDERS MIC FACILITY WITH REGARD TO THE
NEEDS OF ADVANCED RADAR AND TELECOMMUNICATION SYSTEMS (13
Refs)
Descriptors: MICROWAVE INTEGRATED CIRCUITS; INTEGRATED
CIRCUIT TECHNOLOGY; STRIP LINES; THIN FILM CIRCUITS; HYBRID
INTEGRATED CIRCUITS; RADAR EQUIPMENT; TELECOMMUNICATION
EQUIPMENT
Identifiers: ADVANCED RADAR; TELECOMMUNICATIONS; MICROWAVE
INTEGRATED CIRCUIT TECHNOLOGY; THIN FILM CIRCUITS; OPEN
MICROSTRIP; HYBRID INTEGRATED CIRCUIT
02
Section Class Codes: B2220J, B2220E, B6320

999031 877003303
THE COUPLING OF SEMICONDUCTOR ELEMENTS TO SUBSTRATES IN
HYBRID THICK-FILM MICROCIRCUITS
CHODURA, P.; FORTUNA, E.
ELETRONIKA (POLAND) VOL.17, NO.7-8 265-9 1978
Coden: EXNIBZ
DESCRIBES THE BONDING OF SEMICONDUCTOR ELEMENTS TO THE
CONDUCTING PATHS IN THICK-FILM HYBRID MICROCIRCUITS.
LOW-ENERGY METHODS ARE ADOPTED USING LOCAL JUNCTION HEATING
AND GLUEING (16 Refs)
Descriptors: INTEGRATED CIRCUIT TECHNOLOGY; HYBRID
INTEGRATED CIRCUITS; THICK FILM CIRCUITS
Identifiers: LOCAL JUNCTION HEATING; GLUEING; HYBRID THICK
FILM INTEGRATED CIRCUITS; SEMICONDUCTOR DEVICE BONDING
02
Section Class Codes: B2220J, B2220G, B2240
Language: POLISH

999030 877003301
PRECISION LASER TRIMMING OF THICK FILM CIRCUITS IN
LARGE-SCALE QUANTITY PRODUCTION
ROSEN, H.G.
SIEMENS AG, MUNICH, GERMANY
WABELEN W.2
SUP. 0 102052, 56 6
LASER 75 OPTO-ELECTRONICS CONFERENCE PROCEEDINGS 103-4
1978
21-27 JUNE 1975 MUNICH, GERMANY
PUBL. BY: AND TECHNOL. PRESS, GUILDFORD, SURREY, ENGLAND
TRIMMING OF THICK-FILM CIRCUITS WITH LASERS HAS PROVED TO BE
ONE OF THE BEST METHODS IN PRESENT-DAY MASS PRODUCTION.

TRIMMING WITH A LASER BEAM IS A THERMAL PROCEDURE. DUE TO
THE GLASS STRUCTURE OF THE RESISTOR MATERIAL ON THE ONE HAND,
AND THE HIGH-ENERGY DENSITY OF THE LASER PULSES ON THE OTHER
HAND, THERE IS A TENDENCY FOR CRACKS TO DEVELOP ON THE WALLS
OF THE CUTS AS A RESULT OF THE THERMAL SHOCK. THESE CRACKS ARE
THE MAIN CAUSE OF SUBSEQUENT RESISTANCE DRIFT. WITH SUITABLY
SELECTED LASER PARAMETERS THE RESISTANCE DRIFT CAN BE KEPT
BELOW 0.3PERCENT THICK-FILM RESISTORS WITH TOLERANCES OF
+0R- 1PERCENT CAN BE REALIZED IN MASS PRODUCTION WITH GOOD
YIELDS
Descriptors: THICK FILM CIRCUITS; INTEGRATED CIRCUIT
MANUFACTURE; LASER BEAM MACHINING
Identifiers: THICK FILM CIRCUITS; MASS PRODUCTION; GLASS
STRUCTURE; CRACKS; THERMAL SHOCK; RESISTANCE DRIFT; PRECISION
LASER TRIMMING; TOLERANCE; HIGH ENERGY LASER PULSE
06
Section Class Codes: B2220G, B4360

999829 877003300
TRENDS IN THICK FILM MATERIALS
MONES, A.H.; ROSENBERG, R.M.
ELECTRONIC MATERIALS DIV., E.I. DU PONT DE NEMOURS AND CO.
INC., WILMINGTON, DE, USA
SOLID STATE TECHNOL. (USA) VOL.19, NO.10 47-9 OCT.
1976 Coden: SSTEAQ
THE OUTSTANDING DEVELOPMENTS ARE REVIEWED SINCE THE 1950'S
AND CURRENT TRENDS (1975) ARE PROJECTED. A TABLE WHICH SHOWS
THE CHANGES IN PHYSICAL PROPERTIES AND PERFORMANCE
CHARACTERISTICS THROUGH THREE TIME PERIODS IS GIVEN
Descriptors: THICK FILM CIRCUITS; INTEGRATED CIRCUIT
TECHNOLOGY; REVIEWS
Identifiers: THICK FILM MATERIALS; TRENDS; PHYSICAL
PROPERTIES; CHARACTERISTICS; DEVELOPMENT SINCE 1950'S; REVIEWS
02
Section Class Codes: B2220G

999028 B77003298
SYNTHESIS AND THIN FILM IMPLEMENTATION OF DISTRIBUTED RC
ACTIVE FILTERS
BENZ, M.W.
INST. FÜR NETZWERK-
STUTTGART, GERMANY

PROCEEDINGS OF THE 1976 IEEE INTERNATIONAL SYMPOSIUM ON
CIRCUITS AND SYSTEMS 224-7 1976
27-29 APRIL 1976 MUNICH, GERMANY
IEEE NEW YORK, USA

ELMENTARY TRANSFER FUNCTIONS RATIONAL IN Z-E/SUP SOROOTPT//
WITH LOW PASS, HIGH PASS, AND BAND PASS CHARACTERISTICS ARE
ESTABLISHED AND REALIZED BY NEW TUNABLE DISTRIBUTED RC
CIRCUITS. THE CIRCUITS CONSIST OF 2 OR 3 UNIFORM RC LINES AND
ONE OPERATIONAL AMPLIFIER, AND THEIR POLE-Q SENSITIVITY CAN BE
MADE SMALLER THAN FOR COMPARABLE LUMPED CIRCUITS. A CASCADE
SYNTHESIS PROCEDURE IS DEVELOPED WHERE THE RC PRODUCTS OF THE
RC-LINES MAY BE COMMENSURATE. FINALLY A TUNED EXPERIMENTAL
THIN FILM FILTER WITH 6TH ORDER CHEBYSHEV CHARACTERISTICS IS
DESCRIBED (9 Refs)

DESCRIPTORS: THIN FILM CIRCUITS; DISTRIBUTED PARAMETER
NETWORKS; ACTIVE FILTERS; TRANSFER FUNCTIONS
IDENTIFIERS: TRANSFER FUNCTIONS; LOW PASS; HIGH PASS; BAND
PASS; TUNABLE; DISTRIBUTED; RC CIRCUITS; RC LINES; OPERATIONAL
AMPLIFIER; SENSITIVITY; CASCADE SYNTHESIS; THIN FILM FILTER;
CHEBYSHEV CHARACTERISTICS; RC ACTIVE CIRCUITS
06

Section Class Codes: B2220E, B1150F, B1270E

999027 B77003297
BIAS-HUMIDITY PERFORMANCE OF ENCAPSULATED AND UNENCAPSULATED
TI-PO-AU THIN-FILM CONDUCTORS IN AN ENVIRONMENTAL CONTAMINATED
WITH CL/SUB 2/
SHAR, N.L.

BILL LAUS., ALLENTOWN, PA, USA
IIT TRANS. PARTS, HYDRIDS AND PACKAG. (USA) VOL. PHP-12,
NO. 11 176-81 SEPT. 1976 Coden: IEPHAA
20TH ELECTRONIC COMPONENTS CONFERENCE 26-28 APRIL 1978
SAN FRANCISCO, CALIF., USA

WITH ENCAPSULATED AND UNENCAPSULATED TI-PO-AU THIN-FILM
CONDUCTORS ON AL/SUB 2/O/SUB 3/ SUBSTRATES WERE BIASED IN AN
85 IN GREESC 80PERCENT RH ENVIRONMENT CONTAMINATED WITH CL/SUB
2/. THE ENCAPSULANT WAS AN RTV SILICONE RUBBER. DURING
EXPOSURE TO THE CORROSIVE ENVIRONMENT, LEAKAGE CURRENTS
BETWEEN ADJACENT CONDUCTORS WERE PERIODICALLY MEASURED AND
RECORDED. LEAKAGE CURRENTS FOR THE UNENCAPSULATED SPECIMENS
INCREASED WITH TIME, AND MANY WERE SHORTED APPROXIMATELY 400
H. THERE WERE NO INCREASES IN LEAKAGE CURRENTS FOR THE
SILICONE RUBBER ENCAPSULATED CONDUCTORS. AT THE END OF THE
TEST, SELECTED SPECIMENS WERE EXAMINED USING A LIGHT
MICROSCOPE AND AN SEM WITH X-RAY CAPABILITY. NO METAL
MIGRATION WAS OBSERVED ON THE ENCAPSULATED SAMPLES. THE
UNENCAPSULATED CONDUCTORS SHOWED DENDRITIC GROWTH BETWEEN THE

ELECTRODES. IT IS CONCLUDED THAT THE RTV SILICONE ENCAPSULANT
EFFECTIVELY PREVENTS HIGH LEAKAGE CURRENTS AND SUBSEQUENT
METAL MIGRATION ON BIASED TI-PO-AU CONDUCTOR SPECIMENS EXPOSED
TO A MOIST CL/SUB 2/ ENVIRONMENT (12 Refs)

DESCRIPTORS: THIN FILM CIRCUITS; ENCAPSULATION; RELIABILITY
IDENTIFIERS: ENVIRONMENTAL CONTAMINATION WITH CL/SUB 2/;
AL/SUB 2/O/SUB 3/ SUBSTRATES; LEAKAGE CURRENTS; BETWEEN
ADJACENT CONDUCTORS; METAL MIGRATION; DENDRITIC GROWTH; BIAS
HUMIDITY PERFORMANCE; TI-PO-AU THIN FILM CONDUCTORS; 80PERCENT
RELATIVE HUMIDITY ENVIRONMENT; RTV SILICONE RUBBER ENCAPSULANT;
ENCAPSULATED THIN FILM CONDUCTORS; UNENCAPSULATED THIN FILM
CONDUCTORS; EXPERIMENTAL RESULTS
06

Section Class Codes: B2220E, B0170J, B0170N

999023 B77003293
MANUFACTURE OF MICROCIRCUITS IN A SMALL INDUSTRIALISED
COUNTRY
LUTSCH, A.G.K.

ELECTRICAL ENGNG. DEPT., RAND AFRICAANS UNIV., JOHANNESBURG,
S. AFRICA
TRANS. S. AFR. INST. ELECTR. ENG. (S. AFRICA) VOL. 67, NO. 9
258-73 SEPT. 1976 Coden: TSAEAG
REVIEWS THE RESEARCH ACTIVITIES IN THE FIELD OF
MICROCIRCUITS AT THE CSIR AND VARIOUS SOUTH AFRICAN
UNIVERSITIES. IT IDENTIFIES THE AIM OF A MANUFACTURING
FACILITY FOR A SMALL INDUSTRIALISED COUNTRY AND DISCUSSES WHAT
HAS, WILL AND SHOULD BE DONE TO IMPLEMENT THE DESIGN AND
MANUFACTURE OF MICROCIRCUITS IN SOUTH AFRICA

DESCRIPTORS: INTEGRATED CIRCUIT MANUFACTURE; THIN FILM
CIRCUITS; THICK FILM CIRCUITS; MONOLITHIC INTEGRATED CIRCUITS
IDENTIFIERS: MANUFACTURING FACILITY; DESIGN; THIN FILM IC;
THICK FILM IC; MONOLITHIC TECHNOLOGY; MOS; MASK MAKING PROCESS
; ENCAPSULATION
02

Section Class Codes: B2220C, B2570

Section Class Codes: B2220G, C7410D, C3950Z
Language: HUNGARIAN

999557 B77002097
REALIZATION OF TRANSFER FUNCTIONS USING A SPECIAL
DISTRIBUTED RC NETWORK STRUCTURE
GRODNER, M.R.
LEHRSTUHL FÜR NETZWERKTHEORIE UND SCHALTUNGSTECHNIK, TECH.
UNIV. MÜNCHEN, MÜNCHEN, GERMANY

PROCEEDINGS OF THE 1976 IEEE INTERNATIONAL SYMPOSIUM ON
CIRCUITS AND SYSTEMS 232-5 1976
27-29 APRIL 1976 MUNICH, GERMANY
IEEE NEW YORK, USA

A NEW SYNTHESIS PROCEDURE IS DEVELOPED FOR DISTRIBUTED RC
REALIZATION OF TRANSFER FUNCTIONS WRITTEN IN THE TRANSFORMED
FREQUENCY VARIABLE s -TANH SOPHOTAUP. THESE PRESCRIBED
TRANSFER FUNCTIONS MAY BE OF ARBITRARY DEGREE AND CAN BE
REALIZED WITHIN A CONSTANT MULTIPLIER BY MEANS OF RECURSIVE
ALGORITHMS. ESSENTIAL CIRCUIT PARAMETERS ARE DETERMINED. THE
SYNTHESIS LEADS TO CIRCUITS CONSISTING OF A CASCADE OF BASIC
STRUCTURES, QUITE SUITABLE FOR REALIZATION IN THIN FILM
TECHNOLOGY. A SPECIAL MATHEMATICAL REPRESENTATION OF THE BASIC
STRUCTURE IS A FUNDAMENTAL APPROACH FOR DEVELOPING THE
OUTLINED PROCEDURE (6 Refs.)

Descriptors: TRANSFER FUNCTIONS; DISTRIBUTED PARAMETER
NETWORKS; ACTIVE FILTERS; THIN FILM CIRCUITS
Identifiers: SYNTHESIS PROCEDURE; DISTRIBUTED RC REALIZATION
; TRANSFER FUNCTIONS; TRANSFORMED FREQUENCY VARIABLE;
RECURSIVE ALGORITHMS; THIN FILM TECHNOLOGY; CASCADE STRUCTURES
06

Section Class Codes: B1150F, B1270E, B2220E

996346 B77000497, C77002197
A DIGITAL PROGRAM TO CONTROL DRAWING MACHINES IN PREPARING
MASTER PATTERNS FOR THICK-FILM INTEGRATED CIRCUITS
RILKA, G.; ALBRECHT, M.
BIELEFELDER UNIVERSITÄT, BIELEFELD, GERMANY
JULY 1976 Coden: EMBAY

A PROGRAM FOR TPA-COMPUTER IS DESCRIBED, FACILITATING MASTER
PATTERNS OF THICK-FILM INTEGRATED CIRCUITS TO BE MADE BY
MACHINE. ON THE BASIS OF THE DESIGNED TOPOLOGY THE DRAFTER
COMPLETES A DATA FORM. WITH THE PREPARED DATA TAPE THE
INTERPRETATIVE PROGRAM PREPARES A DOCUMENTATION LIST
CONTAINING ALSO THE TECHNOLOGICAL PARAMETERS, AS WELL AS
PUNCHED TAPES CONTROLLING THE DIGITAL DRAWING MACHINE. THE
PROGRAM CONTAINS ALSO THE CALIBRATING ALGORITHM FOR THE
RESISTANCES WITHIN THE THICK-FILM INTEGRATED CIRCUIT (1
Ref.)

Descriptors: CIRCUIT LAYOUT CAD; THICK FILM CIRCUITS;
COMPUTERISED INSTRUMENTATION; DIGITAL CONTROL
Identifiers: DIGITAL PROGRAM TO CONTROL DRAWING MACHINES;
PREPARING MASTER PATTERNS; INTERPRETATIVE PROGRAM; DIGITAL
DRAWING MACHINE; THICK FILM CIRCUITS; CALIBRATING PROGRAM FOR
RESISTANCE
02

992063 B77001557
SYNCHRONISATION CIRCUIT AND A SWEEP GENERATOR IN
MICROCIRCUIT CONFIGURATION FOR SMALL OSCILLOSCOPES
BODNAR, Z.M.; VINVAR, V.D.; GIZHA, I.M.; KURLYAK, YA.S.;
POLUSHINA, S.G.; YARENKO, V.I.
POLUPROVDON, TEKH. AND MIKROELEKTRON. (USSR) NO.24 59-66
1976 Coden: PTAJAC

EXAMINES THE DESIGN OF A SYNCHRONISATION CIRCUIT AND A SWEEP
GENERATOR, EMPLOYING HYBRID THICK-FILM MICROCIRCUITS, IN A
SMALL-SIZE OSCILLOSCOPE WITH A BANDWIDTH OF 10 MHz. FACTORS
ASSOCIATED WITH THE REALISATION OF THE SAW-TOOTH VOLTAGE
GENERATOR, USING AN FET FEEDBACK LOOP IN MICROCIRCUIT FORM ARE
DISCUSSED. THE ELECTRICAL CIRCUITS, THE CONSTRUCTION AND THE
TECHNOLOGY OF MANUFACTURE OF THE MICROCIRCUITS ARE DESCRIBED
(15 Refs.)

Descriptors: CATHODE-RAY OSCILLOSCOPES; THICK FILM CIRCUITS;
HYBRID INTEGRATED CIRCUITS; TIME BASES
Identifiers: SMALL OSCILLOSCOPES; SYNCHRONISATION CIRCUIT;
SWEEP GENERATOR; BANDWIDTH OF 10 MHz; CONSTRUCTION; TECHNOLOGY
OF MANUFACTURE; THICK FILM HYBRID ICs; TIME BASES; FET
FEEDBACK LOOP; CIRCUIT DIAGRAMS
02

Section Class Codes: B7250G, B1230G, B2220J, B2220G
Language: RUSSIAN

991793 B77001197
A WIDEBAND SWITCHING NETWORK WITH INTEGRATED SEMICONDUCTOR CROSSPOINTS
KLEIN, W.
FORSCHUNGSINST. ULW, AEG-TELEFUNKEN, ULM, GERMANY
NACHRICHTENTECH. Z. (NTZ) (GERMANY) VOL.29, NO.10 756-61
DCT. 1976 Coden: NAZEA

FOR SWITCHING OF ANALOGUE WIDEBAND SIGNALS. SWITCHING NETWORKS WITH LARGE BANDWIDTH AND HIGH CROSSTALK ATTENUATION ARE NEEDED. HYBRID WIDEBAND SWITCHING NETWORKS WERE REALIZED ALMOST ENTIRELY FROM ELECTROMECHANICAL CROSSPOINTS. THIS REPORT DESCRIBES THE CONSTRUCTION AND THE PROPERTIES OF A WIDEBAND SWITCHING NETWORK, WHICH CONSISTS OF SEMICONDUCTOR CROSSPOINTS REALIZED IN THICKFILM TECHNOLOGY AND WHICH WAS TESTED IN A SMALL EXPERIMENTAL PICTUREPHONE SYSTEM. BY COMPARING THE PROPERTIES OF THE NETWORK WITH THE CDS-RECOMMENDATIONS FOR THE TELEVISION HYPOTHEMETICAL REFERENCE CIRCUIT IT IS SHOWN THAT THE WIDEBAND SWITCHING NETWORK IS SUITABLE FOR USE IN SMALL PICTUREPHONE SYSTEMS (6 Refs)
DESCRIPTORS: THICK FILM CIRCUITS; ELECTRONIC SWITCHING SYSTEMS; SWITCHING NETWORKS
IDENTIFIERS: WIDEBAND SWITCHING NETWORK; INTEGRATED SEMICONDUCTOR CROSSPOINTS; LARGE BANDWIDTH; HIGH CROSSTALK ATTENUATION; EXPERIMENTAL PICTUREPHONE SYSTEM; TELEVISION HYPOTHEMETICAL REFERENCE CIRCUIT

Section Class Codes: B6230B, B1290, B2220G

991798 B77000508
TECHNOLOGICAL ASPECTS OF MANUFACTURE OF HYBRID INTEGRATED CIRCUITS AT MICROVACS
VOLKOVA, I.A.; GRISHCHUK, S.A.; DMITRENKO, E.I.; SENISHIN, Y.A.
POLUPROVOZH. TEKH. AND MIKROELEKTRON. (USSR) NO.24 67-71
1976 Coden: PTMJAC

GENERAL TECHNICAL REQUIREMENTS FOR MICROWAVE HYBRID INTEGRATED CIRCUIT (HIC) COMPONENTS ARE ESTABLISHED. THE EXISTING METHODS OF OBTAINING THE REQUIRED CONFIGURATIONS OF THE HYBRID IC COMPONENTS ARE ANALYSED. THE OPTIMUM TECHNOLOGICAL PROCESSES FOR THE MANUFACTURE OF THESE COMPONENTS ARE DESCRIBED. INVOLVING DRILLING OF SUBSTRATES, VACUUM DEPOSITION OF NICKEL-CU FILM ONTO THE WORKING AND SCREENED SURFACES, FOLLOWED BY PHOTOLITHOGRAPHIC OPERATIONS, CHEMICAL ETCHING AND ELECTROLYTIC DEPOSITION OF METAL ONTO CONDUCTORS (6 Refs)

DESCRIPTORS: MICROWAVE INTEGRATED CIRCUITS; HYBRID INTEGRATED CIRCUITS; VACUUM DEPOSITION; THIN FILM CIRCUITS; INTEGRATED CIRCUIT TECHNOLOGY; PHOTOLITHOGRAPHY; NICKEL COATING

IDENTIFIERS: ASPECTS OF MANUFACTURE; MICROWAVE HYBRID INTEGRATED CIRCUIT; TECHNOLOGICAL PROCESSES; DRILLING OF SUBSTRATES; VACUUM DEPOSITION OF NICKEL-CU FILM; PHOTOLITHOGRAPHIC OPERATIONS; CHEMICAL ETCHING; ELECTROLYTIC DEPOSITION

02
Section Class Codes: B2220J, B1350, B0520F, B2220E
Language: RUSSIAN

991284 B77000504
DEVELOPMENT AND APPLICATIONS OF THIN FILM TANTALUM HYBRID CIRCUITS
KRUGER, G.
FUNKSCHAU (GERMANY) VOL.48, NO.20 853-6 24 SEPT. 1976
Coden: FUSHA2

PROBABLEMENTS FOR INTEGRATED CIRCUITS FOR SHORT PRODUCTION RUNS ARE STATED. THE TANTALUM LAYERS ARE PRODUCED ON 75 MM-75 MM SUBSTRATES BY CATHODIC SPUTTERING. RESISTOR PATTERNS ARE PRODUCED BY ETCHING AND A MINIATURE FORM OF REFLOW SOLDERING IS EMPLOYED. THE SUBSTRATE CONSISTS OF GLASS AND PHOTO-MASKING AND SCREEN PRINTING ARE EMPLOYED. THE SHEET RESISTIVITY OF THE TANTALUM LAYERS (TANTALUM OXY-HYDRIDE) IS STATED TO BE 50 TO 70 OHMS. TRACK WIDTHS ARE DOWN TO 50 MICRONS AND LENGTH-WIDTH RATIOS OF 1000 ARE STATED TO BE POSSIBLE. GIVING RESISTANCE RANGES FROM 100 OHMS TO 100 KILOHMS. WITH ABSOLUTE RESISTANCE ERRORS OF 10 PER CENT AND RATIO ERRORS OF 1 PER CENT. PRODUCTION PROCESSES FOR PASSIVE TANTALUM NETWORKS ARE DESCRIBED. TANTALUM HYBRID CIRCUITS FOR A PORTABLE TRANSMITTER IN THE RANGE 80 TO 450 MHZ ARE DESCRIBED. INDUSTRIAL AND MARINE APPLICATIONS OF TANTALUM HYBRID CIRCUITS ARE MENTIONED. AND COST CONSIDERATIONS ARE ADVANCED (10 Refs)

DESCRIPTORS: HYBRID INTEGRATED CIRCUITS; THIN FILM CIRCUITS
IDENTIFIERS: CATHODIC SPUTTERING; MINIATURE FORM OF REFLOW SOLDERING; PHOTO-MASKING; SCREEN PRINTING; PORTABLE TRANSMITTER; 80 TO 450 MHZ; COST CONSIDERATIONS; THIN FILM TA HYBRID ICs; SHORT PRODUCTION RUNS; GLASS SUBSTRATES; PRODUCTION PROCESSES; 50 TO 70 OHM SHEET RESISTIVITY; 50 MICRON TRACK WIDTHS; 100 OHM TO 100 KOHM RESISTANCE RANGE; PASSIVE TA NETWORKS

02
Section Class Codes: B2220J, B2220E
Language: GERMAN

991282 B77000502
THIN FILM HYBRIDS' A BRIEF LOOK AT THE POOR MAN'S LSI
CARPANI, E.
ELECTRON (GB) NO.103 58, 60 7 OCT. 1976 Codent:
ELTCL
Mentions the main reasons for the use of thin-film hybrid
ICs and their special characteristics, including suitability
for microwave ICs. The performance capability of laser trimmed
nickel-chrome thin-film resistors is given. The advantages and
disadvantages of thin-film hybrid, thick-film hybrid, and
monolithic IC are compared.
Descriptors: THIN FILM CIRCUITS; HYBRID INTEGRATED CIRCUITS;
THIN FILM RESISTORS
Identifiers: CHARACTERISTICS; THIN FILM HYBRID ICs; THIN
FILM RESISTORS PERFORMANCE
07
Section Class Codes: B2220J, B2220E, B2120

991281 B77000501
INTEGRATED THIN AND THICK FILM CIRCUITS
FRIEDEL, W.; POTTHARST, J.
STANDARD ELEKTRIK LORENZ AG. STUTTGART, GERMANY
NIG-FACHBER. (GERMANY) VOL.54 85-96 1975 Codent:
NIGON.
TECHNOLOGIEN FÜR DIE NACHRICHTENTECHNIK. (COMMUNICATION
ENGINEERING TECHNOLOGY) 1975 GERMANY
A BRIEF SURVEY OF THE PRESENT STATE OF THE ART OF THIN AND
THICK FILM MODULE TECHNIQUES AND HYBRID ASSEMBLIES IS
PRESENTED, WITH 14 ILLUSTRATIONS. MATERIALS FOR SUBSTRATES AND
DEPOSITS, MANUFACTURING TECHNOLOGIES (PHOTOCHEMICAL, VACUUM
SPUTTERING), TYPICAL PHYSICAL AND ELECTRICAL PARAMETERS,
TOLERANCES, STABILITY AND RELIABILITY ARE DISCUSSED, FOLLOWED
BY NOTES ON APPLICATIONS. (7 Refs)
Descriptors: THIN FILM CIRCUITS; THICK FILM CIRCUITS;
INTEGRATED CIRCUITS; HYBRID INTEGRATED CIRCUITS; CIRCUIT
RELIABILITY
Identifiers: THICK FILM CIRCUITS; THICK FILM MODULE
TECHNIQUES; HYBRID ASSEMBLIES; SUBSTRATES; DEPOSITS;
MANUFACTURING TECHNOLOGIES; TOLERANCES; STABILITY; RELIABILITY
; THIN FILM CIRCUITS
06
Section Class Codes: B2220G, B2220E, B2220J
Language: GERMAN

991280 B77000500
GLASS-PASSIVATED THICK-FILM CAPACITORS FOR RC CIRCUITS
BATSCHUN, W.R.
ZEMITH RADIO CORP., ELK GROVE VILLAGE, IL, USA
LIFE TRANS. PARTS, HYBRIDS AND PACKAG. (USA) VOL. PHP-12,
NO.13 104-201 SEPT. 1976 Codent: IEPHAA
2/FM ELECTRONIC COMPONENTS CONFERENCE 26-28 APRIL 1976
SAN FRANCISCO, CALIF., USA

THE ADVANTAGES, DISADVANTAGES, AND THE REASONS FOR THE
LIMITED USAGE OF THICK-FILM CAPACITORS ARE DISCUSSED. THE
ELECTRICAL AND ENVIRONMENTAL PROPERTIES OF A GLASS-PASSIVATED
HIGH DIELECTRIC CONSTANT (HDK) (=1000) CAPACITOR WHICH DOES
NOT REQUIRE HERMETIC PACKAGING ARE DESCRIBED. DESIGN CRITERIA
FOR ACHIEVING A LOW-COST THICK-FILM CAPACITOR-RESISTOR-CONDUCTOR
NETWORK ARE PRESENTED. THESE INCLUDE: SATISFYING MULTIPLE
CIRCUIT REQUIREMENTS; USING MANY CAPACITORS, RESISTORS, AND
CONDUCTORS PER CIRCUIT OR PER PROCESSING OPERATION; USING
LOW-COST MATERIALS, SEALING TECHNIQUES, AND PROCESSES; AND
ACHIEVING HIGH YIELDS. AN EXAMPLE IS GIVEN OF A TELEVISION
VARIABLE TUNER CIRCUIT ON A 2.3-0.040-IN SUBSTRATE UTILIZING
47 RESISTORS, 30 CAPACITORS, EIGHT CROSSOVERS, AND ONE GROUND
PLANE IN WHICH THE SUBSTRATE ALSO SERVES AS A PRINTED CIRCUIT
BOARD FOR MOUNTED DISCRETE COMPONENTS (22 Refs)
Descriptors: THICK FILM DEVICES; CAPACITORS; THICK FILM
CIRCUITS; PASSIVATION
Identifiers: RC CIRCUITS; TELEVISION VARIABLE TUNER CIRCUIT;
GLASS-PASSIVATED THICK FILM CAPACITORS; HIGH DIELECTRIC
CONSTANT CAPACITORS; DESIGN CRITERIA FOR RC NETWORK
06
Section Class Codes: B2220G, B2130

991278 B77000498
THICK FILM RESISTOR SERIES FEATURES LOW CONTACT NOISE, HIGH
VOLTAGE STABILITY, AND LOW PROCESS SENSITIVITY
GARCIA, P.F.; ROSENBERG, R.M.
ELECTRONIC MATERIALS DIV., E.I. DU PONT DE NEMOURS AND CO.
INC., NIAGARA FALLS, NY, USA
INSUL./CIRCUITS (USA) VOL.22, NO.10 25-7 SEPT. 1976
Codent: ISCU8F
SOURCES OF PROCESS SENSITIVITY, HIGH VOLTAGE STABILITY, AND
LOW CONTACT NOISE IN HIGH RESISTIVITY THICK FILM RESISTORS ARE
CONSIDERED. DESIGN CRITERIA ARE SUGGESTED FOR OPTIMIZATION OF
THESE PROPERTIES. ON THE BASIS OF THESE CRITERIA, THE HIGH
RESISTIVITY, HIGH VOLTAGE RESISTOR SERIES IS DEVELOPED WITH
CHARACTERISTICS SUITABLE FOR TELEVISION FOCUS CONTROL
CIRCUITRY (6 Refs)
Descriptors: THICK FILM RESISTORS; THICK FILM CIRCUITS
Identifiers: LOW CONTACT NOISE; HIGH VOLTAGE STABILITY; LOW
PROCESS SENSITIVITY; HIGH RESISTIVITY THICK FILM RESISTORS;
HIGH VOLTAGE RESISTOR SERIES; SUITABLE FOR TELEVISION FOCUS
CONTROL CIRCUITRY; SOURCES OF PROCESS SENSITIVITY; DESIGN
CRITERIA
02
Section Class Codes: B2220G, B2120

991277 877000493
AN INEXPENSIVE THICK FILM FURNACE
BEGANIS, N.
SCHOOL OF ELECTRONIC ENGRG., SOUTH AUSTRALIAN INST. OF
TECHNOL., AUSTRIA
ELECTROCOMPON. SCI. AND TECHNOL. (GB) VOL.3, NO.2 113-15
SEPT. 1976 Coden: ECSTCS
THE CENTRE OF ANY THICK FILM TEACHING OR RESEARCH
ESTABLISHMENT IS THE FURNACE FOR FIRING THE THICK FILM PASTES.
THESE ARE USUALLY LARGE AND EXPENSIVE BELT FURNACES. THIS
ARTICLE DISCUSSES THE DESIGN AND MANUFACTURE OF AN INEXPENSIVE
THREE ZONE BELT FURNACE OF MODERATE SIZE, WHICH ANY REASONABLY
WELL EQUIPPED COLLEGE, UNIVERSITY OR SMALL MANUFACTURER COULD
ASSEMBLE
Descriptiors: INTEGRATED CIRCUIT TECHNOLOGY; THICK FILM
CIRCUITS
Identifiers: THICK FILM FURNACE; FIRING; THICK FILM PASTES;
THREE ZONE BELT FURNACE
02
Section Class Codes: B2220G

991275 877000494
EXTENDING THE USE OF THICK FILM
BARNALL, P.G.
ELECTRON (GB) NO.103 56, 58 7 OCT. 1978 Coden:
ELTHCL
DISCUSSES RESISTOR NETWORKS WITH LOW TEMPERATURE
COEFFICIENT, HIGH VALUE/HIGH VOLTAGE RESISTORS, MICROWAVE
CIRCUITS, AND THICK FILM TRANSDUCERS (4 Refs)
Descriptiors: THICK FILM CIRCUITS; THICK FILM RESISTORS;
REVIEWS
Identifiers: RESISTOR NETWORKS; LOW TEMPERATURE COEFFICIENT;
HIGH VALUE/HIGH VOLTAGE RESISTORS; MICROWAVE CIRCUITS;
TRANSDUCERS; REVIEWS; THICK FILM RESISTORS
02
Section Class Codes: B2220G, B2120

991272 877000491
FEASIBILITY OF PRODUCING THIN-FILM INDUCTIVE COILS AT
MICROWAVES
GRISHCHUK, S.A.; DMITRIENKO, E.I.; NEDOSTUP, N.A.;
FABRIKANT, B.A. TEKH. AND MIKROELEKTRON. (USSR) NO.24 71-9
1978 Coden: PTMUAC
FORMULAE AND MONOGRAMS ARE DERIVED FOR THE DESIGN OF
THIN-FILM INDUCTIVE COILS. THE RELATIONSHIP BETWEEN THE
GEOMETRY AND THE ELECTRICAL PARAMETERS OF THIN-FILM INDUCTIVE
COILS IS ESTABLISHED, AND THE RESULTS OF THE ANALYSIS ARE USED
TO ARRIVE AT THE OPTIMUM CONFIGURATION OF THE COILS. THIN-FILM
COILS WITH INDUCTANCES BETWEEN 0.1 AND 10 MHM, AND Q-VALUES
FROM 50 TO 200 IN THE RANGE 20-250 MHZ, ARE OBTAINED BY VACUUM
DEPOSITION OF NICKEL-COPPER ONTO SUBSTRATES, USING PHOTORESIST MASKS

DURING THE GROWTH OF SILVER AND PHOTOLITHOGRAPHIC TECHNIQUES
(12 Refs)

Descriptiors: MICROWAVE INTEGRATED CIRCUITS; THIN FILM
DEVICES; THIN FILM CIRCUITS; INDUCTORS; VACUUM DEPOSITION
Identifiers: MONOGRAMS; GEOMETRY; ELECTRICAL PARAMETERS;
OPTIMUM CONFIGURATION; VACUUM DEPOSITION OF NICKEL-COPPER;
PHOTORESIST MASKS; PHOTOLITHOGRAPHIC TECHNIQUES; THIN FILM
INDUCTIVE COILS; FORMULAE; MICROWAVE INDUCTIVE COILS; 0.1 TO
10 MICRON INDUCTANCES; Q-FACTOR 50 TO 200; FREQUENCY 20 TO 250
MHZ
02

Section Class Codes: B2220E, B0520F
Language: RUSSIAN

991270 877000489
AN INSTRUMENT FOR TESTING PARAMETER DEVIATIONS OF
MICROELECTRONIC DEVICES
KAN, A.G.; NIKITIN, A.G.
POLUPROVODN. TEKH. AND MIKROELEKTRON. (USSR) NO.24 96-8
1976 Coden: PTMUAC

DESCRIBES CIRCUIT DETAILS AND THE OPERATION OF A TESTER, FOR
USE IN INVESTIGATIONS OF FAILURES OF MICROELECTRONIC DEVICES,
AND MEASUREMENT OF DEVIATIONS OF PARAMETERS, SUCH AS
RESISTANCE, CAPACITANCE AND BIAS CURRENT OF CAPACITORS, AS
WELL AS CONDUCTANCE OF SWITCHING ROUTES AND JUNCTIONS, AS A
FUNCTION OF TEMPERATURE, PRESSURE AND HUMIDITY, AND OTHER
FACTORS. THE INPUT SIGNAL RANGE OF THE TESTER IS 5 V TO 0.5 V,
INPUT SENSITIVITY 45 MW, MAXIMUM OPERATING FREQUENCY OF THE
COMPARATORS 20 MHZ, INPUT FREQUENCY RANGE 0 TO 10 MHZ AND
CURRENT CONSUMPTION OF 150 MA. IN CONJUNCTION WITH ELECTRONIC
COUNTERS, THIS INSTRUMENT CAN ALSO BE USED FOR INVESTIGATIONS
OF MICRO-BREAKDOWNS OF THIN-FILM CAPACITORS (4 Refs)

Descriptiors: INTEGRATED CIRCUIT TESTING; TEST EQUIPMENT;
THIN FILM CIRCUITS; THIN FILM CAPACITORS
Identifiers: INSTRUMENT; TESTING PARAMETER DEVIATIONS;
OPERATION; MEASUREMENT OF DEVIATIONS OF PARAMETERS; RESISTANCE
; CAPACITANCE; BIAS CURRENT OF CAPACITORS; CONDUCTANCE OF
SWITCHING ROUTES; FUNCTION OF TEMPERATURE; COMPARATORS; INPUT
FREQUENCY RANGE 0 TO 10 MHZ; CURRENT CONSUMPTION OF 150 MA; 1C
TESTER; 4 OR 5 V INPUT SIGNAL RANGE; FAILURE ANALYSIS; 20 MHZ
MAXIMUM FREQUENCY; FUNCTION OF PRESSURE; FUNCTION OF HUMIDITY;
CIRCUIT DIAGRAM; MICROBREAkdOWNS OF THIN FILM CAPACITORS; 5 MW
INPUT SENSITIVITY; THIN FILM CAPACITORS TESTING
02

Section Class Codes: B2220, B2570, B0170E, B7210X
Language: RUSSIAN

991204 B77000417
ELECTROLESS PLATING-ITS APPLICATIONS IN RESISTOR TECHNOLOGY
DEARDEN, J.
WELBYN ELECTRIC LTD., BEDLINGTON, ENGLAND
ELECTROCOMPON. SCI. AND TECHNOL. (GB) VOL.3, NO.2 103-11
SEPT. 1976 Coden: ECSTCS

THE APPLICATIONS OF ELECTROLESS NICKEL AS A READILY SOLUBLE, COMPLETELY OHMIC CONTACT FOR TIN OXIDE RESISTORS IS DESCRIBED. COPPER OXIDE LAYERS PRODUCED FROM OXIDISED ELECTROLESS COPPER ARE SHOWN TO IMPROVE THE THERMAL STABILITY OF TIN OXIDE RESISTORS. A RANGE OF ELECTROLESS HIGH PRECISION METAL FILM RESISTORS FROM A FRACTION OF AN OHM TO 100 K OHM PER SQUARE AND FROM A FEW MILLIMETRES IN LENGTH TO OVER 1 METRE IS SHOWN TO BE FEASIBLE. THIS TECHNOLOGY HAS BEEN APPLIED TO THE MANUFACTURE OF THIN FILM CIRCUITS. THE OUTSTANDING THERMAL STABILITY OF THE ELECTROLESS NICKEL-IRON FILMS AND THEIR TEMPERATURE COEFFICIENT OF RESISTANCE INDICATES A POTENTIAL APPLICATION IN THE FIELD OF TEMPERATURE SENSORS. THE ABILITY TO PRODUCE 'WEIGHTLESS' FILMS ON MYLAR SHEET AT 10 OHM PER SQUARE IS CONSIDERED TO BE A SOLUTION TO THE CHARGE DISTRIBUTION REQUIREMENT FOR ELECTROSTATIC LOUSPEAKERS (14 Ref.)

Descriptors: THIN FILM RESISTORS; INTEGRATED CIRCUIT TECHNOLOGY
Identifiers: RESISTOR TECHNOLOGY; ELECTROLESS HIGH PRECISION METAL FILM RESISTORS; THIN FILM CIRCUITS; THERMAL STABILITY; TEMPERATURE COEFFICIENT OF RESISTANCE; TEMPERATURE SENSORS; ELECTROSTATIC LOUSPEAKERS; ELECTROLESS PLATING; SHO/SUB 2/ RESISTORS; NI-B FILM

Section Class Codes: B2120, B2220E

991193 B77000406
A STRIPLINE INPUT STAGE FOR AN S-BAND RECEIVER
GROZ, N.M.; IRLIN, A.V.; KEMPA, Y.A.M.
POLUPROVDN. TEKH. AND MIKROELEKTRON. (USSR) NO.24 25-7
1976 Coden: PTNUAC

AN ACCOUNT IS GIVEN OF THE DESIGN AND EVALUATION OF THE INPUT STAGE OF AN S-BAND RECEIVER COMPRISING AN INPUT CIRCUIT, A MIXER, A PREAMPLIFIER AND A SECOND MIXER. THE INPUT STAGE WAS MANUFACTURED BY METHODS OF HYBRID THIN-FILM TECHNOLOGY. THE CHARACTERISTICS OF THIS STAGE ARE AS FOLLOWS: GAIN 20 DB, BANDWIDTH 10 MHZ, MINIMUM SENSITIVITY 10/SUP -12/ W, NOISE FIGURE 13.5 DB AND THE OPERATING TEMPERATURE RANGE -50 TO +50 DEGREES C (13.3 Ref.)

Descriptors: MICROWAVE INTEGRATED CIRCUITS; SOLID-STATE MICROWAVE CIRCUITS; RADIO RECEIVERS; HYBRID INTEGRATED CIRCUITS; THIN FILM CIRCUITS

Identifiers: STRIPLINE INPUT STAGE; S-BAND RECEIVER; DESIGN; EVALUATION; CHARACTERISTICS; GAIN 20 DB; BANDWIDTH 10 MHZ; MINIMUM SENSITIVITY 10/SUP -12/ W; NOISE FIGURE 13.5 DB; -50 TO +50 DEGREES C OPERATION; MIC; HYBRID THIN FILM TECHNOLOGY; TWO MIXER STAGES

02

Section Class Codes: B1350F, B2220J, B6420D, B2220E, B6250
Language: RUSSIAN

991178 B77000390
MILLIMETER-WAVE THIN-FILM DOWNCONVERTER
SHELL, W.W., JR.; SCHNEIDER, M.V.
IEEE LABS., HOLMDEL, NJ, USA

IEEE TRANS. MICROWAVE THEORY AND TECH. (USA) VOL. MIT-24, NO.11 804-6 NOV. 1976 Coden: JETMAB
A 60-GHZ HYBRID INTEGRATED DOWNCONVERTER INTENDED FOR USE IN A MILLIMETER-WAVE RADIO RELAY EXPERIMENT HAS BEEN DESIGNED AND TESTED. THE CONVERTER CONSISTS OF A STRIP TRANSMISSION LINE CIRCUIT AND TWO BEAM-LEADED SCHOTTKY-BARRIER DIODES WHICH ARE PULSED AT A SUBHARMONIC OF THE CONVENTIONAL LOCAL OSCILLATOR FREQUENCY. THE CONVERSION LOSS OF THE CIRCUIT IS 6.3 DB AND THE TOTAL SINGLE-SIDEBAND NOISE FIGURE, INCLUDING THE NOISE CONTRIBUTION FROM THE IF AMPLIFIER, IS 9.1 DB. THE CIRCUIT LOOKS ATTRACTIVE FOR MILLIMETER-WAVE COMMUNICATION SYSTEMS APPLICATION UP TO 100 GHZ (6 Refs)

Descriptors: HYBRID INTEGRATED CIRCUITS; MICROWAVE INTEGRATED CIRCUITS; THIN FILM CIRCUITS; SOLID-STATE MICROWAVE CIRCUITS; BEAM-LEAD DEVICES; SCHOTTKY-BARRIER DIODES; PARAMETRIC DEVICES
Identifiers: STRIP TRANSMISSION LINE CIRCUIT; MILLIMETER WAVE THIN FILM DOWNCONVERTER; HYBRID INTEGRATED CIRCUITS; BEAM LEADED SCHOTTKY BARRIER DIODES; 60 GHZ

Section Class Codes: B1350D, B1350F, B2220J, B2560H, B2220E

991174 B77000386
A DISTRIBUTED-STRUCTURE THIN-FILM MICROWAVE ATTENUATOR
POLUSHINA, S.G.; MIKHAILOVA, G.F.
POLUPROVDN. TEKH. AND MIKROELEKTRON. (USSR) NO.24 36-40
1976 Coden: PTNUAC

THE EXISTING METHODS OF PRACTICAL DESIGN OF POWER DIVIDERS, WITH THE AID OF DISTRIBUTED STRUCTURES, ARE EXAMINED AND REFINED FOR THE CASE OF MICROWAVE THIN-FILM ATTENUATORS. THE APPLICATION OF THE OBTAINED EXPRESSIONS, AND OF A GRAPH SHOWING THE DIVISION FACTOR VERSUS SIZE OF THE ATTENUATOR, ARE ILLUSTRATED BY AN EXAMPLE (6 Refs)

Descriptors: THIN FILM CIRCUITS; ATTENUATORS; MICROWAVE INTEGRATED CIRCUITS
Identifiers: POWER DIVIDERS; DISTRIBUTED STRUCTURES; DERIVED EXPRESSIONS; DIVISION FACTOR; THIN FILM MICROWAVE ATTENUATORS; THIN FILM CIRCUITS

Section Class Codes: B1350, B2220E, B1270, B2220J
Language: RUSSIAN

991132 B77000342
A FREQUENCY MULTIPLIER IN MICROCIRCUIT CONFIGURATION
BCH'KO, S.I.; VIN'AR, V.D.; YAREMENKO, V.I.

[illegible]

Section Class Codes: B12908. B2220E
Language: RUSSIAN

991120 877000332
TECHNOLOGY OF MANUFACTURE OF THIN-FILM VOLTAGE DIVIDERS
VLASOVA, V.V.; GRISHCHUK, S.A.; SENISHIN, YA.M.; FABRIKANT,

THE PRESENT MANUFACTURE OF HIGH-STABILITY PRECISION VOLTAGE DIVIDERS INVOLVING SEVERAL POSSIBLE PROCEDURES, FOR SUCH COMPONENTS ARE EXAMINED, AND THE MOST SUITABLE DIVIDER MATERIAL IS RECOMMENDED. NICHROME WAS USED AS THE RESISTANCE MATERIAL FOR THE DIVIDERS. THE TRIMMING OF THE INPUT AND OUTPUT RESISTANCES OF THE DIVIDERS, WHICH ENABLED THE DIVIDERS TO BE ADJUSTED WITH AN ACCURACY OF ± 0.01 PERCENT, AND THE DIVISION FACTOR WITH AN ACCURACY OF ± 0.001 PERCENT (7 μ W's).

Section Class Codes: B1290, B2220E, B2120
Language: RUSSIAN

091118 B77000308
A SWITCHABLE ACTIVE FILTER HYBRID
PIUSSTEIN, W.
MICROELECTRONICS DEPT., MOTOROLA INC., FORT LAUDERDALE, FL,
USA
IEEE TRANS. PARTS, HYBRIDS AND PACKAG. (USA) VOL. PHP-12,
NO. 13 201-6 SEPT. 1976 Codew: IEPHAA

26TH ELECTRONIC COMPONENTS CONFERENCE
SAN FRANCISCO, CALIF., USA

A UNIQUE ACTIVE BANDPASS FILTER IS DESCRIBED, WHICH IS CAPABLE OF SELECTING ANY OF 12 DIFFERENT FREQUENCIES AS DEFINED BY A DIGITAL INPUT. THIS DEVICE UTILIZES BOTH THICK-FILM AND THIN-FILM TECHNOLOGIES TO THEIR BEST ADVANTAGES. FILTERING IS PERFORMED BY A STATE VARIABLE ACTIVE FILTER CIRCUIT DESIGNED AROUND A CUSTOM LINEAR INTEGRATED CIRCUIT (LICI) AND PRECISELY MATCHED COMPONENTS. FREQUENCY SELECTION IS ACCOMPLISHED BY A CUSTOM MOS DEVICE. FUNCTIONAL LASER TRIMMING OF BOTH THIN- AND THICK-FILM RESISTORS IS EMPLOYED TO ADJUST CIRCUIT CHARACTERISTICS TO EXTREMELY TIGHT TOLERANCES. THE DEVICE MUST BE PACKAGED TO MAINTAIN A HIGH LEVEL OF STABILITY OVER A WIDE RANGE OF ENVIRONMENTS. TWO DIFFERENT PACKAGING TECHNIQUES ARE PRESENTLY BEING EMPLOYED. THE FIRST IS A STANDARD CHIP AND WIRE TECHNIQUE AND THE SECOND RELIES ON DEVICES WHICH ARE PREPACKAGED IN SMALL CERAMIC CARRIERS. THIS CIRCUIT IS BEING PRODUCED IN PRODUCTION VOLUMES. (10 Refs.)

Section Class Codes: B1270E, B2220E, B2220G, B2220J

991076 87700239
A FREQUENCY SYNTHESIZER USING THIN-FILM COMPONENTS
VINYAR, V.D.; KEMPA, Y.A.M.; KOTLYAROV, A.V.

1976). GORDON, PHOTOLITHOGRAPHIC FREQUENCY SYNTHESIZER, DESIGNED BY METHODS OF THE UNIVERSITY OF TEXAS AT AUSTIN, DESCRIBES A TECHNOLOGY IN WHICH PASSIVE PARTS OF THE CIRCUIT ARE MANUFACTURED ON SEPARATE DIRTIED-GLASS SUBSTRATES, USING A CR-CO₂ LASER, FOLLOWED BY PHOTOLITHOGRAPHIC CONVERSION. THE SYNTHESIZER PERFORMS 7/3 TIMES FREQUENCY CONVERSION, PRODUCING AN OUTPUT OF 0.3 V INTO A 50 OHM LOAD, FOR AN INPUT SIGNALING OF 0.2 V. THE LEVEL OF SPURIOUS SIGNALS IN THE SPECTRUM IS ≈ 30 DB. CIRCUIT AND CONSTRUCTIONAL DETAILS OF THE SYNTHESIZER ARE PRESENTED (6 Refs)

02
Section Class Codes: B1230, B2220E
Language: RUSSIAN

987607 B7646571, C7631008
COMPUTER DESIGNED MULTILAYER HYBRID SUBSTRATE USING THICK
FILM TECHNOLOGY
MALVOGEL, CH.W.
WESTING DEFENSE AND ELECTRONIC SYSTEMS CENTER, BALTIMORE,
MD, USA
ELECTRONIC INDUSTRIES ASSOC. FRANCE, ET AL.
INTERNATIONAL CONFERENCE ON MANUFACTURING AND PACKAGING
TECHNIQUES FOR HYBRID CIRCUITS 203-8 1976
7-8 APRIL 1976 PARIS, FRANCE
ELECTRONIC INDUSTRIES ASSOC. FRANCE PARIS, FRANCE
STATE OF THE ART SYSTEM DESIGNS REQUIRE LARGER, MORE DENSELY
POPULATED, THEORETICALLY STABLE, MULTILAYER HYBRID SUBSTRATES.
INCREASED LOGIC DENSITIES DICTATE THE NEED FOR NARROWER
CONDUCTOR LINE WIDTHS AND BETTER SCREENING TECHNIQUES.
INCREASING MATERIAL AND LABOR COSTS, AS WELL AS COMPONENT
SHORTAGES, ARE ALSO MAJOR CONSIDERATIONS IN THE EFFICIENT
DESIGN OF COMPLEX SUBSTRATES. PRESENTED HEREIN ARE THE
MATERIALS, SCREENING TECHNIQUES, AND PROCESS STEPS REQUIRED TO
FABRICATE A DENSELY POPULATED HYBRID USING COMPUTER GENERATED
NETWORK. THE SUBSTRATE DEVELOPED IN THIS PAPER IS PRODUCED FOR
THE NAVAL AIR DEVELOPMENT CENTER; THE PROTOTYPE UNITS HAVE
BEEN COMPLETED AND A PRODUCTION LOT IS BEING FABRICATED. THE
HYBRID CONSISTS OF ONE 32 SCREENED LAYER BERYLLIUM SUBSTRATE
HOLED IN 2.5 SECONDS (2.5 MICRONS, 4.165 MICRONS METAL PACKAGE,
THE SUBSTRATE UTILIZES 13% (1.5 M SERIES) TTL CHIPS, OPERATES
AT A FREQUENCY OF 10 MEGAHERTZ, AND DISSIPATES 10 WATTS
ON-BOARD.

DESCRIPTION: HYBRID INTEGRATED CIRCUITS; THICK FILM CIRCUITS
; INTEGRATED CIRCUIT PRODUCTION; COMPUTER-AIDED CIRCUIT DESIGN
; ELECTRONICS APPLICATIONS OF COMPUTERS
Identifiers: MULTILAYER HYBRID SUBSTRATE; THICK FILM
TECHNOLOGY; MATERIALS; SCREENING; DENSELY POPULATED HYBRID;
COMPUTER GENERATED NETWORK; PROTOTYPE UNITS; PRODUCTION;
COMPUTERISED DESIGN
On
Section Class Codes: B2540, B2522, B1269, C0842
Unified Class Codes: SMEAAB, SMEACX, ADGMAE, WMEEAQ

986404 B7640561, C7629863
HYBRID CIRCUIT MANUFACTURING MECHANIZATION IN R.T.C
JOURDAN, P.; PETIT, R.
R.T.C. LA RADIOTECHNIQUE-COMPELEC, EVREUX, FRANCE
ELECTRONIC INDUSTRIES ASSOC. FRANCE, ET AL.
INTERNATIONAL CONFERENCE ON MANUFACTURING AND PACKAGING
TECHNIQUES FOR HYBRID CIRCUITS 99-106 1976
7-8 APRIL 1976 PARIS, FRANCE
ELECTRONIC INDUSTRIES ASSOC. FRANCE PARIS, FRANCE
R.T.C. LA RADIOTECHNIQUE-COMPELEC IS WELL KNOWN IN THE HYBRID
INTEGRATED CIRCUIT DOMAIN AND MAINLY FOR ITS THIN FILM
PRODUCTS. THE USE OF CRYSTALS WITH SOLDER BUMPS OFFERS THE
POSSIBILITY TO PRESENT PRODUCTS OF HIGH LEVEL QUALITY ON THE
THIN FILMS, AND WITH COMPETITIVE PRICES IN REGARD TO OTHER
THIN FILM TECHNOLOGIES OFFERED ON THE MARKET. IN FACT, THE USE
OF CRYSTALS WITH SOLDER BUMPS AVOID THE WIRE BONDING WHICH IS

OFTEN THE CAUSE OF DEFECTS IN SEMICONDUCTORS. THIS TECHNOLOGY
AFFORDS ADVANTAGES IN THE REALIZATION OF THE HYBRID INTEGRATED
CIRCUIT AUTOMATIC ASSEMBLY. IN THIS WAY, TWO MAIN CHOICES HAVE
BEEN DEVELOPED BY R.T.C. (1) THE REALIZATION OF SOLDER BUMPS ON
THE WAFER IS MADE IN THE HYBRID PRODUCTION LINE ACCORDING TO A
PROCESS WHICH HAS SHOWN EVIDENCE OF ITS QUALITY WITHIN THE
GROUP; (2) AN AUTOMATIC COMPONENTS ASSEMBLY LINE, ON THE
SUBSTRATE HAS BEEN DEVELOPED TAKING ADVANTAGE OF THE FACT THAT
THE CRYSTAL WITH SOLDER BUMP CAN BE TREATED IN THE SAME WAY AS
THE COMPONENTS USED IN HYBRID TECHNOLOGY. ALL THE ASSEMBLING
POSTS ARE CONTROLLED BY A COMPUTER. THE REPORT ON THE RESULTS
OBTAINED SHOWS THE NUMEROUS APPLICATIONS OFFERED BY THIS
SOLUTION

DESCRIPTIONS: HYBRID INTEGRATED CIRCUITS; INTEGRATED CIRCUIT
PRODUCTION; THIN FILM CIRCUITS; PRODUCTION CONTROL; CONTROL
ENGINEERING APPLICATIONS OF COMPUTERS; ELECTRONICS
APPLICATIONS OF COMPUTERS
Identifiers: MANUFACTURING MECHANIZATION; HYBRID INTEGRATED
CIRCUITS; THIN FILM PRODUCTS; SEMICONDUCTORS; AUTOMATIC
ASSEMBLY; PRODUCTION LINE; QUALITY; ASSEMBLING; COMPUTER
06

Section Class Codes: B2540, B2524, B1269, C2062, C0842,
C0846
Unified Class Codes: SMEAAB, SMECAH, ADGMAE, VMHEAE, WMEEAQ,
WMEKAS
Language: FRENCH

983032 B7649522
THE MICROCIRCUIT PACEMAKER SPACE AGE SPIN-OFF TO ACHIEVE
RELIABILITY AND LONG LIFE
ADAMS, T.P.; FASANO, W.D., JR.
IEEE

PROCEEDINGS OF THE 1975 ANNUAL RELIABILITY AND
MAINTAINABILITY SYMPOSIUM 360-5 1975
20-30 JAN. 1975 WASHINGTON, D.C., USA
IEEE NEW YORK, USA
THE PAPER SPECIFICALLY ADDRESSES THE IMPORTANCE OF
MINIATURIZATION AND HIGH RELIABILITY TO THE SUCCESS OF
PACEMAKER OPERATION. THE GENERAL THEORY OF OPERATION,
COMPARISONS OF DISCRETE DEVICES AND HYBRID MICROCIRCUITS,
DESIGN CONCEPTS, DESCRIPTION OF CONFIGURATIONS AND CIRCUITS,
PROCUREMENT POLICIES AND PRINCIPLES, PROCESSES UTILIZED,
ASSEMBLY AND INSPECTION PROCEDURES AND TESTING PHILOSOPHIES
DESCRIPTIONS: PACEMAKERS; HYBRID INTEGRATED CIRCUITS; CIRCUIT
RELIABILITY
Identifiers: MINIATURIZATION; RELIABILITY; PACEMAKER;
DISCRETE DEVICES; HYBRID MICROCIRCUITS; DESIGN CONCEPTS;
PROCUREMENT POLICIES; ASSEMBLY; INSPECTION PROCEDURES; TESTING
PHILOSOPHIES; MICROCIRCUIT
06

Section Class Codes: B4660, B1263, B2540
Unified Class Codes: ZRWCAJ, ADGDAL, SMEAAB

ION MICROPROBE: AUGER ELECTRON SPECTROSCOPY; ENVIRONMENTAL TESTS: AU-AG BONDS
06
Section Class Codes: B2540
Unified Class Codes: SWEAAB

981573 B7646577
PACKAGES AND FILM RESISTORS FOR HYBRID MICROCIRCUITS
LATE, C.H.
RIDE AIR DEV. CENTER, GRIFFISS AFB, NY, USA
TITLE

13TH ANNUAL PROCEEDINGS OF RELIABILITY PHYSICS SYMPOSIUM
230-41 1975
1-3 APRIL 1976 LAS VEGAS, NEV., USA
FILE NEW YORK, USA

A REVIEW OF RESISTOR SYSTEMS, AND THE PROCESSES USED TO DEPOSIT AND DELINEATE THEM, IS GIVEN. EFFECTS OF MECHANICAL, THERMAL, CHEMICAL AND ELECTRICAL STRESSES ARE DISCUSSED AS THEY RELATE TO ACCURACY AND STABILITY. FAILURE MECHANISMS ARE REVIEWED. TRIMMING TECHNIQUES ARE EXPLORED AND DESIGN LIMITS FOR THE VARIOUS SYSTEMS DISCUSSED. PARAMETERS OF INTEREST SUCH AS FREQUENCY RESPONSE, TEMPERATURE COEFFICIENT, VOLTAGE COEFFICIENT AND NOISE ARE COMPARED FOR THE VARIOUS SYSTEMS. FINALLY, QUALITY CONTROL AND SCREENING TECHNIQUES ARE DISCUSSED AS THEY RELATE TO FAILURE MECHANISMS AND PACKAGE QUALITY AND RELIABILITY CONTROL (B Refs)
Description: HYBRID INTEGRATED CIRCUITS; THIN FILM RESISTORS; RELIABILITY; THICK FILM RESISTORS; PACKAGING; QUALITY CONTROL;

Identifiers: FILM RESISTORS; HYBRID MICROCIRCUITS; DESIGN LIMITS; FREQUENCY RESPONSE; TEMPERATURE COEFFICIENT; VOLTAGE COEFFICIENT; NOISE; QUALITY CONTROL; SCREENING TECHNIQUES; FAILURE MECHANISMS; PACKAGE QUALITY; RELIABILITY; TRIMMING TECHNIQUES; PACKAGES
06

Section Class Codes: B2540, B1266, B1263
Unified Class Codes: SWEAAB, ADGHAM, ADGDAI

981571 B7646575
SUSCEPTIBILITY OF MICROWELDS IN HYBRID MICROCIRCUITS TO CORROSION DEGRADATION
JILLISON, J.L.
SAMPA LABS., ALBUQUERQUE, NM, USA
TITLE

13TH ANNUAL PROCEEDINGS OF RELIABILITY PHYSICS SYMPOSIUM
70-9 1975
1-3 APRIL 1976 LAS VEGAS, NEV., USA
FILE NEW YORK, USA

ANALYSIS OF BROKEN ULTRASONIC AL-AG BONDS INVOLVING SEM ELECTRON MICROPROBE, ION MICROPROBE, AND AUGER ELECTRON SPECTROSCOPY INDICATED THAT FAILURE WAS DUE TO CORROSION. SUBSEQUENT ENVIRONMENTAL TESTS DEMONSTRATED THAT AL-AG BONDS ARE HIGHLY SUSCEPTIBLE TO CORROSION, BUT AL-AU AND AU-AL BONDS ARE LESS SO. NO EVIDENCE OF CORROSION OF AU-AG BONDS WAS FOUND (5 Refs)

Description: HYBRID INTEGRATED CIRCUITS; WELDING; ULTRASONIC APPLICATIONS; CORROSION; ENVIRONMENTAL TESTING; INTEGRATED CIRCUIT TESTING
Identifiers: MICROWELDS; HYBRID MICROCIRCUITS; CORROSION DEGRADATION; ULTRASONIC AL-AG BONDS; SEM ELECTRON MICROPROBE;

981569 B7646572
A THICK FILM HYBRID POCKET MULTIMETER
KOCIS, A.
UNIV. DES SCI. APPLIQUEES, UNIV. DE SHERBROOKE, SHERBROOKE, QUEBEC, CANADA
ELECTRONIC INDUSTRIES ASSOC. FRANCE, ET AL.
INTERNATIONAL CONFERENCE ON MANUFACTURING AND PACKAGING TECHNIQUES FOR HYBRID CIRCUITS 209-17 1976
7-8 APRIL 1976 PARIS, FRANCE

ELECTRONIC INDUSTRIES ASSOC. FRANCE PARIS, FRANCE
THE DESIGN AND REALIZATION OF A POCKET MULTIMETER BY UNDERGRADUATE STUDENTS IS DESCRIBED. THE FABRICATION TECHNIQUE IS DESCRIBED WITH SUFFICIENT LENGTH. THE AUTHOR UNDERLINES THE KIND OF CHALLENGE UNIVERSITIES ARE UP TO WITH REGARD TO MICROELECTRONICS

Description: THICK FILM CIRCUITS; HYBRID INTEGRATED CIRCUITS; INTEGRATED CIRCUIT PRODUCTION; MEASUREMENT SYSTEMS
Identifiers: DESIGN; REALIZATION; POCKET MULTIMETER; UNDERGRADUATE STUDENTS; FABRICATION TECHNIQUE; MICROELECTRONICS; THICK FILM HYBRID CIRCUIT
06

Section Class Codes: B2540, B2522, B4270, B1269
Unified Class Codes: SWEAAB, SMCCAX, BECRAX, ADGMAE

981568 B7646570
HYBRID THICK FILM CIRCUIT TECHNOLOGY USE FOR AIRBORNE
EQUIPMENT
SABOUARD, P.; MINAULT, M.
END, SAINT-CLOUD, FRANCE
ELECTRONIC INDUSTRIES ASSOC., FRANCE, ET AL.
INTERNATIONAL CONFERENCE ON MANUFACTURING AND PACKAGING
TECHNIQUES FOR HYBRID CIRCUITS 191-201 1976
7-8 APRIL 1976 PARIS, FRANCE
ELECTRONIC INDUSTRIES ASSOC., FRANCE PARIS, FRANCE
PROCESSES AND MATERIALS WHICH ARE USED, SUBSTRATES,
CONDUCTIVE AND RESISTIVE LAYERS, MULTILAYERS PROCESS, ETC. ARE
BRIEFLY DESCRIBED. EXAMPLES OF DESIGNS IN THE FIELD OF LOGIC
CIRCUIT MODULES USING MULTILAYERS PROCESS ARE SHOWN. THE
ADVANTAGES AND LIMITS OF THE THICK FILM TECHNOLOGY TOWARDS
VOLUME, RELIABILITY AND COST CRITERIA ARE ANALYSED.
Descripteurs: HYBRID INTEGRATED CIRCUITS; THICK FILM CIRCUITS
; LOGIC CIRCUITS; CIRCUIT RELIABILITY; INTEGRATED CIRCUIT
PRODUCTION
Identifiers: AIRBORNE EQUIPMENT; SUBSTRATES; RESISTIVE
LAYERS; MULTILAYERS PROCESS; DESIGNS; LOGIC CIRCUIT MODULES;
ADVANTAGES; LIMITS; THICK FILM TECHNOLOGY; RELIABILITY; COST;
HYBRID THICK FILM CIRCUITS; CONDUCTIVE LAYERS
ON
Section Class Codes: B2540, B2522, B1263, B1269
Unified Class Codes: SMEAAB, SMCCAX, AODGAL, AODMAE
Language: FRENCH

981569 B7646568
HYBRID CIRCUIT OVERTAKING FEATURES
BISWAT, N.
DIPT, D.G.M. THOMSON, C.S.F., ORSAY, FRANCE
ELECTRONIC INDUSTRIES ASSOC., FRANCE, ET AL.
INTERNATIONAL CONFERENCE ON MANUFACTURING AND PACKAGING
TECHNIQUES FOR HYBRID CIRCUITS 173-80 1976
7-8 APRIL 1976 PARIS, FRANCE
ELECTRONIC INDUSTRIES ASSOC., FRANCE PARIS, FRANCE
THE TWO INTERESTING HYBRID CIRCUIT FEATURES ARE REDUCTION OF
SIZE, AND TECHNICAL ADVANTAGES. THEY ARE ILLUSTRATED BY THREE
EXAMPLES: MICROPROCESSOR, HIGH-FREQUENCY OSCILLATOR, ACTIVE
FILERS. THE THICK FILM MULTILAYERS TECHNOLOGIES AND STANDARD
MONOLITHIC CHIPS ALLOW THE REALIZATION OF CUSTOM DESIGN
COMPLEX MICROPROCESSORS, MADE FROM HIGHLY MINIATURIZED THIN
FILM CIRCUITS. THE OSCILLATORS HAVE STABLE CHARACTERISTICS AT
HIGH FREQUENCY AND GOOD REPRODUCIBILITY. THE HYBRID CIRCUITS
TECHNOLOGY BRINGS REALLY NEW SOLUTIONS FOR ACTIVE FILTERS
MANUFACTURING
Descripteurs: HYBRID INTEGRATED CIRCUITS; THICK FILM CIRCUITS
; MICROPROCESSORS; OSCILLATORS; ACTIVE FILTERS
Identifiers: HYBRID CIRCUIT; THICK FILM; MICROPROCESSORS;
ACTIVE FILTERS; MANUFACTURING; HIGH FREQUENCY OSCILLATORS
ON
Section Class Codes: B2540, B2522, B1269
Unified Class Codes: SMEAAB, SMCCAX, AODMAE

981565 B7646567
ORGANIZATION OF HYBRID THICK FILM MANUFACTURING FOR
DIVERSIFIED MARKET
DELL'ACQUA, R.; FORLANI, F.
DIV. ELETTRONICA FIVRE, MAGNETI MARELLI, PAVIA, ITALY
ELECTRONIC INDUSTRIES ASSOC., FRANCE, ET AL.
INTERNATIONAL CONFERENCE ON MANUFACTURING AND PACKAGING
TECHNIQUES FOR HYBRID CIRCUITS 163-72 1976
7-8 APRIL 1976 PARIS, FRANCE
ELECTRONIC INDUSTRIES ASSOC., FRANCE PARIS, FRANCE
A BRIEF DESCRIPTION OF THE STRUCTURE OF THE HYBRID CIRCUIT
MARKET IS GIVEN AND AN ATTEMPT IS MADE TO GIVE A MATHEMATICAL
OUTLINE CORRELATING THIS MARKET STRUCTURE AND HYBRID CIRCUIT
PRODUCTION IN ORDER TO OPTIMIZE IT. A VERY FLEXIBLE
ORGANIZATION BASED ON THE ACTUAL STRUCTURE OF THE MARKET IS
THEN DESCRIBED. SUCH A FLEXIBILITY IS ACHIEVED, AMONG OTHER
THINGS, BY KEEPING THE PRODUCTION RESPONSIBILITY OF SMALL
SERIES, UNDER THE DESIGN AND DEVELOPMENT GROUP AND BY
TRANSFERRING UNDER PRODUCTION RESPONSIBILITY MEDIUM-LARGE
VOLUME PRODUCTS ONLY
Descripteurs: HYBRID INTEGRATED CIRCUITS; THICK FILM CIRCUITS
; INTEGRATED CIRCUIT PRODUCTION
Identifiers: THICK FILM; MANUFACTURING; DIVERSIFIED MARKET;
HYBRID CIRCUIT PRODUCTION; ORGANISATION
ON
Section Class Codes: B2540, B2522, B1269
Unified Class Codes: SMEAAB, SMCCAX, AODMAE
Language: FRENCH

Section Class Codes: B2540, B2522, B1269
Unified Class Codes: SMEAAB, SMCCAX, AODMAE
Language: FRENCH

981564 B7646566
THE APPLICATION OF IMPROVED THICK FILM TECHNIQUES AND MATERIALS IN THE PRODUCTION OF COMPLEX HYBRID MODULES
KIRBY, P.L.
WELYN ELECTRIC LTD., BEDLINGTON, ENGLAND
ELECTRONIC INDUSTRIES ASSOC. FRANCE, ET AL.
INTERNATIONAL CONFERENCE ON MANUFACTURING AND PACKAGING TECHNIQUES FOR HYBRID CIRCUITS 155-62 1976
7-8 APRIL 1976 PARIS, FRANCE
06
ELECTRONIC INDUSTRIES ASSOC. FRANCE PARIS, FRANCE
THE SUPERFICIAL SIMILARITY BETWEEN TODAY'S THICK FILM HYBRID CIRCUIT AND SOME OF THE EARLIEST PRODUCTS OF THICK FILM TECHNOLOGY IN THE EARLY 1960'S IS MISLEADING. THERE HAS BEEN SUFFICIENT PROGRESS IN EVERY ASPECT OF THE SUBJECT AND THIS PAPER SHOWS HOW MANY OF THESE IMPROVEMENTS CAN BE BROUGHT TOGETHER TO PRODUCE A NEW RANGE OF ADVANCED HYBRID MODULES WHICH ARE INCAPABLE OF REALISATION BY ANY OTHER AVAILABLE TECHNIQUE. THE IMPROVED STABILITY OF THICK FILM DESIGNS; THEIR GREATLY REDUCED T.C.R.; THEIR LOW NOISE AND DILUTE NON LINEARITY; THEIR IMPROVED COMPATIBILITY WITH THICK FILM CONDUCTORS WHICH THEMSELVES SHOW IMPROVED BONDING PROPERTIES; THE AVAILABILITY OF SINGLE CONDUCTOR CHIPS FOR DIRECT ATTACHMENT TO THICK FILM CONDUCTORS AND THE RELIABILITY WHICH CAN NOW BE ACHIEVED IN FIRE WIRE BONDING CAN ALL BE INTEGRATED WITH HIGH ACCURACY FUNCTIONAL RESISTOR ADJUSTMENT AND ENCAPSULATION IN A FULLY HERMETIC PACKAGE. THESE ACHIEVEMENTS ARE ILLUSTRATED BY REFERENCE TO COMPLEX HIGH DENSITY MODULES WHICH HAVE BEEN PROVIDED FOR A VARIETY OF HIGH RELIABILITY APPLICATIONS.
Descripteurs: HYBRID INTEGRATED CIRCUITS; THICK FILM CIRCUITS
Identifiers: THICK FILM; PRODUCTION; HYBRID MODULES
06
Section Class Codes: B2540, B2522, B1269
Unified Class Codes: SMEAB, SMCCAX, ADGMAE

981558 B7646558
COMPARISON BETWEEN THICK AND THIN FILMS TECHNOLOGIES
JOLLY, J.
DEPT. CIRCUITS INTEGRES HYBRIDES, LTT, CONFLANS-STE-HONORIN-LEZ, FRANCE
ELECTRONIC INDUSTRIES ASSOC. FRANCE, ET AL.
INTERNATIONAL CONFERENCE ON MANUFACTURING AND PACKAGING TECHNIQUES FOR HYBRID CIRCUITS 25-33 1976
7-8 APRIL 1976 PARIS, FRANCE
06
ELECTRONIC INDUSTRIES ASSOC. FRANCE PARIS, FRANCE
TWO TECHNOLOGIES HAVE BEEN USED FOR TEN YEARS TO MANUFACTURE HYBRID INTEGRATED CIRCUITS: PASSIVE SUBSTRATES MADE OF PHOTO-ETCHED THIN FILMS CAN BE REPLACED BY PASSIVE SCREENED THICK FILM SUBSTRATES. HIGH RELIABILITY MICROELECTRONICS MOSTLY USING THIN FILMS TECHNIQUES ARE NOW SWITCHING TO THICK FILM FOR SOME APPLICATIONS. BOTH TECHNOLOGIES HAVE BEEN USED FOR THE DESIGN OF THE SAME MILITARY COMMUNICATION CIRCUIT. THIS STUDY SPONSORED BY THE FRENCH SECTION D'ETUDES ET FABRICATIONS DES TELECOMMUNICATIONS WAS DIRECTED TO THE MANUFACTURE OF HYBRID INTEGRATED CIRCUITS FOR HITTA SYSTEM REPEATER GENERATOR. THE PURPOSE WAS TO INTEGRATE THE FOLLOWING CIRCUITS: CLOCK AMPLIFIER, EQUALIZER, LEVEL DETECTOR, CLOCK FREQUENCY REGULATOR AND TO COMPARE FROM A TECHNICAL AND ECONOMIC POINT OF VIEW THE USE OF THIN AND THICK FILM TECHNOLOGIES. (1 Refs)
Descripteurs: HYBRID INTEGRATED CIRCUITS; INTEGRATED CIRCUIT PRODUCTION; THICK FILM CIRCUITS; THIN FILM CIRCUITS; REPEATERS
Identifiers: MILITARY EQUIPMENT
06
Section Class Codes: B2540, B2522, B1269, B3560
Unified Class Codes: SMEAB, SMCCAX, ADGMAE, FEKAAA
Language: FRENCH

981562 B764656A
THE SELECTION OF CONDUCTOR MATERIALS FOR THICK FILM HYBRID CIRCUITS
PALLAPPELLI, G.P.; SIDORA, E.J.
DILL TELEPHONE LAB. INC., ALLENTOWN, PA, USA
ELECTRONIC INDUSTRIES ASSOC. FRANCE, ET AL.
INTERNATIONAL CONFERENCE ON MANUFACTURING AND PACKAGING TECHNIQUES FOR HYBRID CIRCUITS 133-40 1976
7-8 APRIL 1976 PARIS, FRANCE
06
ELECTRONIC INDUSTRIES ASSOC. FRANCE PARIS, FRANCE
THIS PAPER DISCUSSES THE SELECTION OF THICK FILM CONDUCTOR MATERIALS. THE SPECIFIC SELECTION CRITERIA CONSIDERED ARE BASED ON THE SOLDERABILITY OF THE CONDUCTOR, THE ADHESION OF THE CONDUCTOR TO A 99PERCENT ALUMINA SUBSTRATE AND THE ELECTRICAL ISOLATION BETWEEN CLOSELY SPACED CONDUCTORS UNDER VOLTAGE BIAS IN HIGH HUMIDITY. IN ADDITION THE ELECTRICAL ISOLATION BETWEEN CLOSELY SPACED CONDUCTORS UNDER BIAS WAS STUDIED IN A SPECIAL ENVIRONMENTAL CHAMBER THAT EXPOSED THE SAMPLES TO HIGH TEMPERATURE, HIGH HUMIDITY AND A DYNAMIC GAS

981560 B764656A
THE SELECTION OF CONDUCTOR MATERIALS FOR THICK FILM HYBRID CIRCUITS
PALLAPPELLI, G.P.; SIDORA, E.J.
DILL TELEPHONE LAB. INC., ALLENTOWN, PA, USA
ELECTRONIC INDUSTRIES ASSOC. FRANCE, ET AL.
INTERNATIONAL CONFERENCE ON MANUFACTURING AND PACKAGING TECHNIQUES FOR HYBRID CIRCUITS 133-40 1976
7-8 APRIL 1976 PARIS, FRANCE
06
ELECTRONIC INDUSTRIES ASSOC. FRANCE PARIS, FRANCE
THIS PAPER DISCUSSES THE SELECTION OF THICK FILM CONDUCTOR MATERIALS. THE SPECIFIC SELECTION CRITERIA CONSIDERED ARE BASED ON THE SOLDERABILITY OF THE CONDUCTOR, THE ADHESION OF THE CONDUCTOR TO A 99PERCENT ALUMINA SUBSTRATE AND THE ELECTRICAL ISOLATION BETWEEN CLOSELY SPACED CONDUCTORS UNDER VOLTAGE BIAS IN HIGH HUMIDITY. IN ADDITION THE ELECTRICAL ISOLATION BETWEEN CLOSELY SPACED CONDUCTORS UNDER BIAS WAS STUDIED IN A SPECIAL ENVIRONMENTAL CHAMBER THAT EXPOSED THE SAMPLES TO HIGH TEMPERATURE, HIGH HUMIDITY AND A DYNAMIC GAS

981560 B764656A
THE SELECTION OF CONDUCTOR MATERIALS FOR THICK FILM HYBRID CIRCUITS
PALLAPPELLI, G.P.; SIDORA, E.J.
DILL TELEPHONE LAB. INC., ALLENTOWN, PA, USA
ELECTRONIC INDUSTRIES ASSOC. FRANCE, ET AL.
INTERNATIONAL CONFERENCE ON MANUFACTURING AND PACKAGING TECHNIQUES FOR HYBRID CIRCUITS 133-40 1976
7-8 APRIL 1976 PARIS, FRANCE
06
ELECTRONIC INDUSTRIES ASSOC. FRANCE PARIS, FRANCE
THIS PAPER DISCUSSES THE SELECTION OF THICK FILM CONDUCTOR MATERIALS. THE SPECIFIC SELECTION CRITERIA CONSIDERED ARE BASED ON THE SOLDERABILITY OF THE CONDUCTOR, THE ADHESION OF THE CONDUCTOR TO A 99PERCENT ALUMINA SUBSTRATE AND THE ELECTRICAL ISOLATION BETWEEN CLOSELY SPACED CONDUCTORS UNDER VOLTAGE BIAS IN HIGH HUMIDITY. IN ADDITION THE ELECTRICAL ISOLATION BETWEEN CLOSELY SPACED CONDUCTORS UNDER BIAS WAS STUDIED IN A SPECIAL ENVIRONMENTAL CHAMBER THAT EXPOSED THE SAMPLES TO HIGH TEMPERATURE, HIGH HUMIDITY AND A DYNAMIC GAS

981560 B764656A
THE SELECTION OF CONDUCTOR MATERIALS FOR THICK FILM HYBRID CIRCUITS
PALLAPPELLI, G.P.; SIDORA, E.J.
DILL TELEPHONE LAB. INC., ALLENTOWN, PA, USA
ELECTRONIC INDUSTRIES ASSOC. FRANCE, ET AL.
INTERNATIONAL CONFERENCE ON MANUFACTURING AND PACKAGING TECHNIQUES FOR HYBRID CIRCUITS 133-40 1976
7-8 APRIL 1976 PARIS, FRANCE
06
ELECTRONIC INDUSTRIES ASSOC. FRANCE PARIS, FRANCE
THIS PAPER DISCUSSES THE SELECTION OF THICK FILM CONDUCTOR MATERIALS. THE SPECIFIC SELECTION CRITERIA CONSIDERED ARE BASED ON THE SOLDERABILITY OF THE CONDUCTOR, THE ADHESION OF THE CONDUCTOR TO A 99PERCENT ALUMINA SUBSTRATE AND THE ELECTRICAL ISOLATION BETWEEN CLOSELY SPACED CONDUCTORS UNDER VOLTAGE BIAS IN HIGH HUMIDITY. IN ADDITION THE ELECTRICAL ISOLATION BETWEEN CLOSELY SPACED CONDUCTORS UNDER BIAS WAS STUDIED IN A SPECIAL ENVIRONMENTAL CHAMBER THAT EXPOSED THE SAMPLES TO HIGH TEMPERATURE, HIGH HUMIDITY AND A DYNAMIC GAS

981557 B7646557
THIN FILM HYBRID MICROCIRCUITS ON POLYMER SUBSTRATES
MICKS, R.E.; ZIMMERMAN, D.D.
APPL. PHYS. LAB.; JOHNS HOPKINS UNIV., LAUREL, MD, USA
ELECTRONIC INDUSTRIES ASSOC. FRANCE, ET AL.
INTERNATIONAL CONFERENCE ON MANUFACTURING AND PACKAGING
TECHNIQUES FOR HYBRID CIRCUITS 19-23 1976
THE APRIL 1976 PARIS, FRANCE
ELECTRONIC INDUSTRIES ASSOC. FRANCE PARIS, FRANCE
POLYMER FILMS HAVE A UNIQUE COMBINATION OF PROPERTIES
MAKING THEM IDEALLY SUITED FOR HYBRID MICROCIRCUIT SUBSTRATES
AND ASSEMBLY INTERCONNECTION TECHNIQUES. THEY MAINTAIN
DESIRABLE CHEMICAL, ELECTRICAL, AND PHYSICAL PROPERTIES OVER A
WIDE TEMPERATURE RANGE. RESULTS OF STUDIES OF THESE PROPERTIES
ARE PRESENTED IN EXAMPLES OF DEVELOPMENTAL PROTOTYPE HYBRID
DESIGN AND SYSTEM PACKAGING SCHEMES USING THIN FILM
TECHNIQUES. (2 Refs)
Descriptores: THIN FILM CIRCUITS; HYBRID INTEGRATED CIRCUITS;
INTEGRATED CIRCUIT PRODUCTION; PACKAGING HYBRID MICROCIRCUIT;
Identifiers: POLYMER SUBSTRATES; HYBRID MICROCIRCUIT;
PACKAGING; THIN FILM
06
Section Class Codes: B2540, B2524
Unified Class Codes: SMEAAB, SMCCAX

981558 B7646558
THE USE OF NICKEL-NI-AU AND CHROMIUM-NI-AU THIN FILM
STRUCTURES IN MODULAR CIRCUITS
SINOLIK, J.
THEY, SOLID FILMS (SWITZERLAND) VOL.36, NO.2 375-8 2
AUG. 1976 Coden: THSTAP
3RD INTERNATIONAL CONFERENCE ON THIN FILMS 25-29 AUG. 1975
BUDAPEST, HUNGARY
A THIN FILM TECHNOLOGY HAS BEEN DEVELOPED TO DESIGN
AND PRODUCE (1) A DECODING RESISTOR NETWORK, (2) AN INTERNAL
OR EXTERNAL REFERENCE CIRCUIT AND (3) AN ANALOGUE VOLTAGE
SWITCHING CIRCUIT FOR A D/A CONVERTOR (3 Refs)
Descriptores: HYBRID INTEGRATED CIRCUITS; INTEGRATED CIRCUIT
PRODUCTION; THIN FILM CIRCUITS; MODULES; THIN FILM RESISTORS;
DECODING; SWITCHING CIRCUITS; DIGITAL-ANALOGUE CONVERSION
Identifiers: NICKEL-NI-AU; CHROMIUM-NI-AU; THIN FILM
STRUCTURES; MODULAR CIRCUITS; HYBRID THIN FILM TECHNOLOGY;
DECODING RESISTOR NETWORK; REFERENCE CIRCUIT; ANALOGUE VOLTAGE
SWITCHING CIRCUIT; D/A CONVERTOR
06
Section Class Codes: B2540, B2524
Unified Class Codes: SMEAAB, SMCEAH

981559 B7646559
THIN FILM HYBRID MICROCIRCUITS-GENERAL APPLICATIONS
(REASONS TO USE THEM)
WITTELAN, D.

981547 B7646547
RIBBON WIRE VERSUS ROUND WIRE RELIABILITY FOR HYBRID
MICROCIRCUITS
GUIDICI, D.C.
FAIRCHILD SEMICONDUCTOR, MOUNTAIN VIEW, CA, USA
ELECTRON, INF. AND PLANN. (INDIA) VOL.3, NO.8 664-8
MAY 1976 Coden: ELIP05
IN AN EFFORT TO CREATE A MORE RELIABLE BOND INTERFACE IN
HYBRID MICROCIRCUITS A STUDY WAS LAUNCHED TO EVALUATE THE
RELATIVE BOND STRENGTHS OF ROUND WIRE AND RIBBON WIRE OF
COMPARABLE CROSS SECTION, AND TO DETERMINE WHICH IS INHERENTLY
MORE RELIABLE AFTER THERMAL DEGRADATION. THIS PAPER PRESENTS A
COMPARATIVE BONDING RELIABILITY STUDY OF ALUMINIUM RIBBON WIRE
VERSUS ROUND WIRE AND GOLD RIBBON WIRE VERSUS ROUND WIRE IN
HYBRID MICROCIRCUITS.
Descriptores: HYBRID INTEGRATED CIRCUITS; CIRCUIT RELIABILITY
; WIRING
Identifiers: RELIABLE BOND INTERFACE; HYBRID MICROCIRCUITS;
ROUND WIRE; RIBBON WIRE; THERMAL DEGRADATION; BONDING
RELIABILITY; ALUMINIUM RIBBON; GOLD RIBBON; ULTRASONIC BONDING
; BOND DEGRADATION; MICROCRACKS
02
Section Class Codes: B2540, B1263, B2340
Unified Class Codes: SMEAAB, ADDGAL, SENNAO

981548 B7646548
RIBBON WIRE VERSUS ROUND WIRE RELIABILITY FOR HYBRID
MICROCIRCUITS
GUIDICI, D.C.
FAIRCHILD SEMICONDUCTOR, MOUNTAIN VIEW, CA, USA
ELECTRON, INF. AND PLANN. (INDIA) VOL.3, NO.8 664-8
MAY 1976 Coden: ELIP05
IN AN EFFORT TO CREATE A MORE RELIABLE BOND INTERFACE IN
HYBRID MICROCIRCUITS A STUDY WAS LAUNCHED TO EVALUATE THE
RELATIVE BOND STRENGTHS OF ROUND WIRE AND RIBBON WIRE OF
COMPARABLE CROSS SECTION, AND TO DETERMINE WHICH IS INHERENTLY
MORE RELIABLE AFTER THERMAL DEGRADATION. THIS PAPER PRESENTS A
COMPARATIVE BONDING RELIABILITY STUDY OF ALUMINIUM RIBBON WIRE
VERSUS ROUND WIRE AND GOLD RIBBON WIRE VERSUS ROUND WIRE IN
HYBRID MICROCIRCUITS.
Descriptores: HYBRID INTEGRATED CIRCUITS; CIRCUIT RELIABILITY
; WIRING
Identifiers: RELIABLE BOND INTERFACE; HYBRID MICROCIRCUITS;
ROUND WIRE; RIBBON WIRE; THERMAL DEGRADATION; BONDING
RELIABILITY; ALUMINIUM RIBBON; GOLD RIBBON; ULTRASONIC BONDING
; BOND DEGRADATION; MICROCRACKS
02
Section Class Codes: B2540, B1263, B2340
Unified Class Codes: SMEAAB, ADDGAL, SENNAO

981549 B7646549
THIN FILM HYBRID MICROCIRCUITS-GENERAL APPLICATIONS
(REASONS TO USE THEM)
WITTELAN, D.

MORE ABOUT THE MICROSTRUCTURE OF THICK FILM MATERIALS
SCHREIDER, B.I.; ZLOOF, H.; VINIKMAN, V.; SAMUEL, A.
ELTA-ELECTRONICS INDUSTRIES LTD., ASHDOD, ISRAEL

IEEE CONVENTION OF ELECTRICAL AND ELECTRONIC ENGINEERS IN
ISRAEL, 22-24 APRIL 1975 TEL AVIV, ISRAEL

DETERMINATION OF MICROSTRUCTURE WAS PERFORMED USING A
SCANNING ELECTRON MICROSCOPE. THE VARIOUS MATERIALS BULK AND
INTERFACIAL STRUCTURE WERE STUDIED. CORRELATIONS BETWEEN THE
EFFECTS OF PROCESSING CONDITIONS ON ELECTRICAL PARAMETERS,
SHEET RESISTANCE AND THERMAL COEFFICIENT OF RESISTANCE WERE
PERFORMED WITH RESPECT TO MICROSTRUCTURE. THIS WORK SERVES TO
OPTIMIZE PROCESSING CONDITIONS FOR IMPROVING QUALITY AND
INCREASING RELIABILITY OF THICK FILM MULTILAYER MICROCIRCUITS
(17 Refs)

Descriptors: THICK FILMS; THICK FILM CIRCUITS; INTEGRATED
CIRCUIT PRODUCTION; ELECTRON MICROSCOPE EXAMINATION OF
MATERIALS; RELIABILITY
Identifiers: MICROSTRUCTURE; THICK FILM MATERIALS; SCANNING
ELECTRON MICROSCOPE; INTERFACIAL STRUCTURE; EFFECTS OF
PROCESSING CONDITIONS; ELECTRICAL PARAMETERS; SHEET RESISTANCE
; THERMAL COEFFICIENT OF RESISTANCE; QUALITY; RELIABILITY;
THICK FILM MULTILAYER MICROCIRCUITS

Section Class Codes: B2522
Unified Class Codes: SMCCAX
Language: ENGLISH

981436 B7646545
SIMPLE TECHNIQUES OF HYBRID FAILURE ANALYSIS AND STEREO
RADIOGRAPHY OF COMPLEX MICROCIRCUITS

GUTDICI, D.C.
FAIRCHILD SEMICONDUCTOR, MOUNTAIN VIEW, CA, USA
ELECTRON, INF. AND PLANN. (INDIA) VOL.3, NO.8 658-64

MAY 1976 CODE: ELIPB5
PRESENTS EXAMPLES OF FOUR TYPES OF HYBRID MICROCIRCUITS.
EACH FABRICATED WITH VARIOUS MATERIALS. THEN DEMONSTRATES THE
VARIOUS METHODS USED FOR MECHANICAL FAILURE ANALYSIS. SOME OF
THE SIMPLEST TECHNIQUES USED FOR OPENING PACKAGES AND REMOVING
COMPONENTS ARE SHOWN. ALSO, THE VALUE OF RADIOGRAPHY TO LOOK
BEFORE OPENING, AND THE USE OF STEREO RADIOGRAPHY AS APPLIED
TO MULTILAYERED PACKAGES ARE DISCUSSED

Descriptors: HYBRID INTEGRATED CIRCUITS; ELECTRICAL FAULTS;
FAILURE ANALYSIS; RADIOGRAPHY
Identifiers: HYBRID MICROCIRCUITS; MECHANICAL FAILURE
ANALYSIS; RADIOGRAPHY; STEREO RADIOGRAPHY; MULTILAYERED
PACKAGES; HYBRID FAILURE ANALYSIS; COMPLEX MICROCIRCUITS;
PACKAGE OPENING

Section Class Codes: B2540, B1263, B1268
Unified Class Codes: SMEAAB, AGGDAL, ZGTAAA

981437 B7646404
A NEW FABRICATION APPROACH TO ADVANCED ELECTRONICS
FROMEK, D.W.
DEPT. OF ELECTRICAL ENGRG., UNIV. OF ALABAMA, HUNTSVILLE,
AL, USA

PROCEEDINGS OF 1975 IEEE SOUTHEASTERN REGION 3 CONFERENCE ON
ELECTRICITY AND EXPANDING TECHNOLOGY, 50-3/1-3 1975
II 6-9 APRIL 1975 CHARLOTTE, N.C., USA

THE MICAPL LAMINATE IS AN ECONOMIC THIN-FILM SUBSTRATE THAT
CAN REDUCE PROTOTYPE COSTS OF SMALL PRODUCTION FACILITIES, AND
THE UNIVERSITY LABORATORY ENVIRONMENT. ORIGINAL DESIGN,
CREATIVITY, AND STUDENT INVOLVEMENT ARE KEY FACTORS IN THESE
UP-IN-DATE LABORATORY EXPERIMENTS. THE PROCESSING IS SIMPLE
AND MAY BE EASILY EMPLOYED IN CONVENTIONAL PRINTED CIRCUIT
FACILITIES

Descriptors: THIN FILM CIRCUITS; INTEGRATED CIRCUIT
PRODUCTION
Identifiers: NEW FABRICATION APPROACH; ADVANCED ELECTRONICS;
MICAPL LAMINATE; SMALL PRODUCTION FACILITIES; UNIVERSITY
LABORATORY ENVIRONMENT; PRINTED CIRCUIT; THIN FILM SUBSTRATE;
ELECTRONICS

Section Class Codes: B2524, B1267
Unified Class Codes: SMEAH, AGGKAT

981432 B7646400

981431 B7646399
LASER FUNCTIONAL TRIMMING TECHNIQUES FOR CONSUMER THICK FILM
CIRCUITS

BRUGMAN, J.M.
PHILIPS LABORATOIRE VIDEO SM3, EINDHOVEN, NETHERLANDS
ELECTRONIC INDUSTRIES ASSOC. FRANCE, ET AL.
INTERNATIONAL CONFERENCE ON MANUFACTURING AND PACKAGING
TECHNIQUES FOR HYBRID CIRCUITS 87-97 1976

7-8 APRIL 1976, PARIS, FRANCE
ELECTRONIC INDUSTRIES ASSOC. FRANCE, PARIS, FRANCE
IN MANUFACTURING THICK FILM CIRCUITS, ACCEPTED FABRICATION
STEPS INCLUDE THE LASER ADJUSTMENT OF CIRCUIT ELEMENTS TO
PREDETERMINED VALUES AND TOLERANCES. IN MANY CASES, IT IS
DESIRABLE TO TRIM THE RESISTOR OR CAPACITOR TO AN UNKNOWN
RESISTANCE OR CAPACITANCE VALUE, USING A CIRCUIT PARAMETER TO
CHECK CONTINUOUSLY THE CIRCUIT RESPONSE AND TO CONTROL THE
LASER BEAM. THIS PROCEDURE IS KNOWN AS FUNCTIONAL TRIMMING. IN
THE COMPUTER ELECTRONICS AREA THIS PROCEDURE IS A PREFERRED
ONE, WHILE IT OFTEN ELIMINATES STATIC TRIMMING OF THICK FILM
COMPONENTS AND/OR THE NEED FOR DISCRETE COMPONENT SELECTION
(18 Refs.)

Descriptores: THICK FILM CIRCUITS; LASER BEAM APPLICATIONS;
INTEGRATED CIRCUIT PRODUCTION
Identifiers: THICK FILM CIRCUITS; MANUFACTURING; LASER BEAM;
CONSUMER ELECTRONICS AREA; TRIMMING

00
Section Class Codes: B2522, B1269, B2980
Unified Class Codes: SMCCAX, ADGMAE, EGMAAA

981428 B7646396
THICK FILM HYBRIDS IN NEW ZEALAND

DE MOCK, D.L.
PHYS. AND ENGNG. LAB., DEPT. OF SCI. AND INDUSTRIAL RES.,
WELLINGTON, NEW ZEALAND

N.Z. ENG. (NEW ZEALAND) VOL.31, NO.6 162-4 15 JUNE
1976 Coden: NZENAS
THE RELATIVELY LOW SETTING-UP COST OF A THICK FILM PLANT
MAKES IT A TECHNOLOGY ATTRACTIVE TO NEW ZEALAND AND GIVES A
FLEXIBILITY THAT SHOULD BE USEFUL IN LOCAL INDUSTRY WHERE
SMALL PRODUCTION RUNS OF A VARIETY OF CIRCUITS ARE MORE COMMON
THAN VERY LARGE RUNS OF A SINGLE CIRCUIT (2 Refs.)

Descriptores: THICK FILM CIRCUITS
Identifiers: THICK FILM PLANT; THICK FILM HYBRIDS

02
Section Class Codes: B2522
Unified Class Codes: SMCCAX

990031 B7645923
THIN FILM MINIATURE POTENTIOMETERS
TAKES, R.; KANDSKY, E.
LEVT, LJUBLJANA, YUGOSLAVIA
THIN SOLID FILMS (SWITZERLAND) VOL.36, NO.2 370 2 AUG.

1976 Coden: THSFAP
3RD INTERNATIONAL CONFERENCE ON THIN FILMS 25-29 AUG. 1975
BUDAPEST, HUNGARY

ABSTRACT ONLY GIVEN, SUBSTANTIALLY AS FOLLOWS: TRENDS IN THE
DEVELOPMENT OF THIN FILM POTENTIOMETERS ARE DISCUSSED. A PRIME
ADVANTAGE IS IN THE MULTILAYER STRUCTURE OF THE RESISTIVE FILM
WHICH GIVES EXCELLENT ELECTRICAL CHARACTERISTICS ESPECIALLY
WITH REGARD TO THE SLIDING CONTACT RESISTANCE. A SPECIFIC
DESIGN OF A MINIATURE TRIMMING POTENTIOMETER FOR PROFESSIONAL
USE IS DESCRIBED
Descriptores: THIN FILM CIRCUITS; THIN FILM RESISTORS;
POTENTIOMETERS; INTEGRATED CIRCUIT PRODUCTION
Identifiers: THIN FILM POTENTIOMETERS; MULTILAYER STRUCTURE;
RESISTIVE FILM; ELECTRICAL CHARACTERISTICS; SLIDING CONTACT
RESISTANCE; DESIGN; MINIATURE TRIMMING POTENTIOMETER

06
Section Class Codes: B2210, B2524
Unified Class Codes: SEEAAS, SMCEAH

980785 B7645635
AN INTEGRATED ALL-THIN-FILM DIGITAL TIMER

CRESSWELL, M.W.; SIENKIEWICZ, L.J.; BOGEL, G.F.; YU, K.K.;
CSAKVARY, T.; ROGERS, W.L.
WESTINGHOUSE RES. LABS., PITTSBURGH, PA, USA

WINNER, L.:
IEEE
1976 IEEE INTERNATIONAL SOLID-STATE CIRCUITS CONFERENCE.
(DIGEST OF TECHNICAL PAPERS) 44-5, 229 1976
18-20 FEB. 1976 PHILADELPHIA, PA., USA

IEEE NEW YORK, USA
A RANDOM LOGIC LSI DIGITAL TIMER CIRCUIT WITH OVER 550
TRANSISTORS DEPOSITED ON A GLASS SUBSTRATE IS DESCRIBED. THE
CIRCUIT WAS SELECTED PRIMARILY AS A VEHICLE TO ESTABLISH THE
VIABILITY OF THIN-FILM TECHNOLOGY IN THIS FIELD (1 Refs.)

Descriptores: DIGITAL INTEGRATED CIRCUITS; LARGE SCALE
INTEGRATION; TIMING CIRCUITS; THIN FILM CIRCUITS
Identifiers: RANDOM LOGIC; DIGITAL TIMER CIRCUIT; GLASS
SUBSTRATE; LSI; THIN FILM TECHNOLOGY

06
Section Class Codes: B1870, B4444, B2524
Unified Class Codes: ETNAAP, BMGAY, SMCEAH

969105 B7641605
THE RELATIVE MERITS OF THIN FILM AND THICK FILM TECHNOLOGY
IN MICROELECTRONICS
FORLANI, F.
MAGNETI MARPELLI, DIV. ELECTRONICA FIVRE, PAVIA, ITALY
THIN SOLID FILMS (SWITZERLAND) VOL.36, NO.2 313-22 2
AUG. 1976 Codon: THSFAP
3RD INTERNATIONAL CONFERENCE ON THIN FILMS 25-29 AUG. 1975
BUDAPEST, HUNGARY
THE AUTHOR FIRST REVIEWS THE HISTORY OF THIN AND THICK FILMS
USED IN HYBRID IC MANUFACTURE AND SOME CHARACTERISTICS AND
APPLICATIONS OF THE TWO TECHNOLOGIES ARE EXAMINED. THE
MECHANISMS OF ELECTRONIC CONDUCTION AND NOISE IN THICK FILMS
ARE DISCUSSED. THE FUTURE FOR THICK FILM TECHNOLOGY IS
APPRAISED (28 refs)
Descriptors: THICK FILM CIRCUITS; THIN FILM CIRCUITS;
INTEGRATED CIRCUIT PRODUCTION; HYBRID INTEGRATED CIRCUITS;
Identifiers: THICK FILM TECHNOLOGY; MICROELECTRONICS;
History: HYBRID IC MANUFACTURE; MECHANISMS; ELECTRONIC
CONDUCTION; NOISE; FUTURE; THIN FILM TECHNOLOGY
Section Class Codes: B2540, B2527, B2524
Unified Class Codes: SMEAAB, SMCCAX, SMCEAH

969104 B7641583
THE MANUFACTURE OF DISTRIBUTED RC CIRCUITS BY HAFNIUM
TECHNOLOGY
LEPPIAVUORI, S.; SUNI, I.; STUBB, T.
DPT. OF ELECTRICAL ENGRG., UNIV. OF OULU, OULU, FINLAND
THIN SOLID FILMS (SWITZERLAND) VOL.36, NO.2 365-9 2
AUG. 1976 Codon: THSFAP
3RD INTERNATIONAL CONFERENCE ON THIN FILMS 25-29 AUG. 1975
BUDAPEST, HUNGARY
IN PURSUING THEIR GOAL OF PRODUCING HF SPUTTERED RESISTORS
AND CAPACITORS OF DISTRIBUTED CIRCUITS IN THE SAME VACUUM,
DIFFICULTIES ACROSS IN THE PRODUCTION OF THE CAPACITORS. THIS
REPORT DESCRIBES THE MANUFACTURE OF THE CAPACITORS. THE
STRUCTURE AND CHARACTERISTICS (LOSS COEFFICIENT, CAPACITANCE
REAL PART OF DIELECTRIC CONSTANT, LEAKAGE CURRENT)
Descriptors: THIN FILM CAPACITORS; THIN FILM CIRCUITS;
INTEGRATED CIRCUIT PRODUCTION; DISTRIBUTED PARAMETER NETWORKS;
Identifiers: MANUFACTURE; DISTRIBUTED RC CIRCUITS;
CAPACITORS; STRUCTURE; CHARACTERISTICS; LOSS COEFFICIENT;
CAPACITANCE; REAL PART OF DIELECTRIC CONSTANT; LEAKAGE CURRENT
; HF THIN FILM TECHNOLOGY; THIN FILM CAPACITORS
06
Section Class Codes: B2524, B2670
Unified Class Codes: SMCEAH, SMMAAR

969103 B7641582
DESIGN AND CHARACTERISTICS OF THIN FILM INTEGRATED CIRCUITS
DANKOVIC, G.DJ.; KOVACEVIC, N.S.

INST. FOR CHEM., TECHNOL. AND METALL., BELGRADE, YUGOSLAVIA
THIN SOLID FILMS (SWITZERLAND) VOL.36, NO.2 348 2 AUG.

1976 Codon: THSFAP
3RD INTERNATIONAL CONFERENCE ON THIN FILMS 25-29 AUG. 1975
BUDAPEST, HUNGARY

SUMMARY ONLY GIVEN. SUBSTANTIALLY AS FOLLOWS: THE RESULTS OF
THE DESIGN AND DEVELOPMENT OF A HIGHLY STABLE THIN FILM NICR
ATTENUATOR CIRCUIT ARE DESCRIBED. THE ELECTRICAL PARAMETERS OF
THE CIRCUIT ARE: (1) IN THE ATTENUATION RANGE 0.1-3.8 NP,
2/SUB C/±600000EGAL; (11) IN THE ATTENUATION RANGE 0.4-2.2 NP,
2/SUB C/±150 000EGAL; (111) POWER DISSIPATION 125 MW; (1V)
RESISTOR TOLERANCE ±0P- 2PERCENT. THE ELECTROPHYSICAL
PROPERTIES OF A THIN NICR (80'20) FILM, DEPOSITED BY VACUUM
EVAPORATION, ARE EXAMINED FOR USE AS A PRIMARY RESISTOR
MATERIAL. THE CONDUCTING FILMS ARE PREPARED BY EVAPORATION OF
Ni IN THE SAME VACUUM CYCLE. RESISTOR LOAD LIFE DRIFT 10000 H
AT 70 DEGREESC. 2/SUB D/±125 MW) IS LESS THAN 0.1PERCENT. THE
TCR 1-40 DEGREESC TO 100 DEGREESC) IS LESS THAN ±0P- 50 PPM
DEGREESC/SUP -1/ AND THE TEMPERATURE CYCLING RESISTANCE DRIFTS
IS LESS THAN 0.1PERCENT. THIN FILM CIRCUITS: ATTENUATORS; THIN FILM
RESISTORS
Descriptors: THIN FILM INTEGRATED CIRCUITS;
Identifiers: CHARACTERISTICS; THIN FILM NICR ATTENUATOR CIRCUIT;
DESIGN; DEVELOPMENT; THIN FILM NICR ATTENUATOR CIRCUIT;
ELECTRICAL PARAMETERS; ATTENUATION; POWER DISSIPATION;
RESISTOR TOLERANCE; ELECTROPHYSICAL PROPERTIES; THIN NICR;
PRIMARY RESISTOR MATERIAL; CONDUCTING FILMS; LOAD LIFE DRIFT;
TEMPERATURE CYCLING RESISTANCE DRIFTS; STABILITY; PRECISION;
2/SUB C/; VACUUM EVAPORATION; SUBSTRATE SIZE; SUBSTRATE SHAPE;
SUBSTRATE MATERIAL; TERMINATION LOCATION; PACKAGING TECHNIQUE;
STABILITY; PRECISION
06
Section Class Codes: B2524, B1880
Unified Class Codes: SMCEAH, ETRAAM

961794 B7637709, C7625513
DATA ACQUISITION IN A DIP SHRINKS SYSTEMS
CALKINS, R.; BERG, A.; JR.
MICRO NETWORKS CORP., WORCESTER, MA, USA
ELECTRONICS (USA) VOL.49, NO.14 77-83 8 JULY 1978
CODING: ELECAD

DISCUSSES THE APPLICATION OF THIN-FILM HYBRID TECHNOLOGY
MAKING POSSIBLE A COMPLETE EIGHT-CHANNEL 8-BIT SYSTEM IN A
SINGLE 32-PIN DUAL-IN-LINE PACKAGE. ASIDE FROM THE OBVIOUS
SPACE SAVINGS, SUCH A HYBRID GREATLY SIMPLIFIES THE DESIGN OF
DATA-PROCESSING SYSTEMS AND OFTEN CAN RESULT IN CONSIDERABLE
COST REDUCTION. IT EFFECTIVELY BRINGS A SYSTEMS FUNCTION DOWN
TO THE COMPONENT LEVEL.

DESCRIPTORS: DATA ACQUISITION; HYBRID INTEGRATED CIRCUITS;
THIN FILM CIRCUITS; PACKAGING; ANALOGUE-DIGITAL CONVERSION
IDENTIFIERS: DATA ACQUISITION DIL PACKAGE; THIN FILM HYBRID
IC; 8 CHANNEL 8 BIT SYSTEM; 32 PIN DIL PACKAGE

Section Class Codes: C9960, B2540, B2524, B1266
Unified Class Codes: A1MAAS, SWEAAB, SMCCEAH, ADGMAH

957029 B7637739
TECHNOLOGICAL REQUIREMENTS FOR PORTABLE THICK FILM HYBRID
DEVICES
KOCIS, A.; LEROUX, A.; RICHARD, S.; AUBE, G.; AUOUTURIER,
J.L.
UNIV. DE SHERBROOKE, QUEBEC, CANADA
ELEC. NAT. ELECTRICAL MANUFACTURERS ASSOC., INST. PRINTED
CIRCUITS
12TH ELECTRICAL/ELECTRONICS INSULATION CONFERENCE 36-9
1975

11-14 NOV. 1975 BOSTON, MASS., USA
IEEE NEW YORK, USA
THIS PAPER PRIMARILY COMPRISES EXCERPTS OF THE WORK DONE
UNDER A REGULAR UNDERGRADUATE TEACHING PROGRAM. THE MATERIAL
IS ORGANIZED INTO SUBJECT GROUPINGS WITH THE INTENTION OF
PRESENTING IN CONVENIENT FORM SUFFICIENT INFORMATION FOR
MAKING HIGH QUALITY THICK FILM PORTABLE DEVICES. THE WORK
EMPHASIZES PROBLEMS AND METHODS OF SOLVING THE CONSTRUCTION OF
A THICK FILM DIGITAL WRIST-WATCH PROTOTYPE. USING A NEW PIAG
INK AND A NOVEL PROCEDURE TO FABRICATE THICK FILM MULTILAYER
STRUCTURES WITH UNUSUALLY HIGH LINE DENSITIES ASSOCIATED WITH
INCREASED YIELDS COMPARED WITH PREVIOUSLY KNOWN METHODS
DESCRIPTORS: THICK FILM CIRCUITS; HYBRID INTEGRATED CIRCUITS
IDENTIFIERS: PORTABLE THICK FILM HYBRID DEVICES; PIAG INK;
THICK FILM MULTILAYER STRUCTURES; HIGH LINE DENSITIES;
TECHNOLOGICAL REQUIREMENTS: DIGITAL WRIST WATCH
0.
Section Class Codes: B2540, B2522
Unified Class Codes: SWEAAS, SMCCEAH

957026 B7637736
THIN FILM HYBRID MICROCIRCUITS ON POLYMER SUBSTRATES
HICKS, R.E.; ZIMMERMAN, D.D.
APPL. PHYS. LAB., LAUREL, MD, USA
IEEE
PROCEEDINGS OF THE 1976 IEEE SOUTHEASTCON REGION 3
CONFERENCE ON ENGINEERING IN A CHANGING ECONOMY 217-18
1976

5-7 APRIL 1976 CLEMSON, S.C., USA
IEEE NEW YORK, USA
EXISTING LABORATORY EQUIPMENT AND PROCESSES WERE USED TO
INVESTIGATE THE SUBSTITUTION OF POLYIMIDE FILM MATERIALS FOR
ALUMINA SUBSTRATES USING THIN FILM, ELECTROLESS PLATING AND
ELECTROPLATING TECHNIQUES. THIS STUDY INCLUDES TECHNIQUES FOR
LAMINATING MULTILAYER POLYIMIDE BOARDS WITH A UNIQUE PLATED
THROUGH HOLE. COMMERCIALLY AVAILABLE PRE-CLAD, METAL,
LAMINATED POLYIMIDE MATERIALS ARE COMBINED WITH THESE HYBRID
CIRCUIT TECHNIQUES TO PRODUCE AN ENTIRE SYSTEM, THEORETICALLY
SEALED HYBRID PACKAGES ARE ESSENTIALLY ELIMINATED WITHOUT
SACRIFICING THE ABILITY TO INTEGRATE THEM INTO THE ASSEMBLY IF
REQUIRED (2 Refs)

DESCRIPTORS: HYBRID INTEGRATED CIRCUITS; SUBSTRATES;
POLYMERS; PACKAGING; INTEGRATED CIRCUIT PRODUCTION; THIN FILM
CIRCUITS
IDENTIFIERS: HYBRID MICROCIRCUITS; POLYIMIDE FILM;
SUBSTRATES; THIN FILM; ELECTROLESS PLATING; ELECTROPLATING;
PLATED THROUGH HOLE; HYBRID PACKAGES

Section Class Codes: B2540, B2524, B1266
Unified Class Codes: SWEAAB, SMCCEAH, ADGMAH

957020 B7637730
TESTS FOR ELECTRICALLY ACTIVE SURFACE CONTAMINANTS FROM
HYBRID MICROCIRCUIT ADHESIVES
SZEDON, J.R.
RES. LAB., WESTINGHOUSE ELECTRIC CORP., PITTSBURGH, PA. USA
IEEE. ELECTRONIC INDUSTRIES ASSOC.
26TH ELECTRONIC COMPONENTS CONFERENCE 368-72 1976
26-28 APRIL 1976 SAN FRANCISCO, CALIF., USA
IEEE NEW YORK, USA
TESTS ARE DESCRIBED OF THE EFFECTS OF OUTGASSING FROM TWO
EPOXIES ON THE ELECTRICAL BEHAVIOUR OF SPECIAL MOS-TYPE TEST
VEHICLES AND OF SURFACE SENSITIVE BIPOLAR TRANSISTORS. A
STRONG CORRELATION IS SHOWN BETWEEN SURFACE POTENTIAL CHANGES
WITH TIME IN THE TEST VEHICLES AND CHANGES IN THE SURFACE
COMPONENT OF TRANSISTION-BASE CURRENT WHICH AFFECT
COLLECTION-BASE CURRENT GAIN. SUGGESTIONS FOR SCREENING
ADHESIVE MATERIALS FOR CHIP ATTACHMENT APPLICATIONS ARE GIVEN
(6 refs.)
Description: HYBRID INTEGRATED CIRCUITS; ASSEMBLING;
INTEGRATED CIRCUIT PRODUCTION
Identifiers: ELECTRICALLY ACTIVE SURFACE CONTAMINANTS;
HYBRID MICROCIRCUIT ADHESIVES; OUTGASSING; EPOXIES; SURFACE
SENSITIVE BIPOLAR TRANSISTORS; MOS DEVICES
06
Section Class Codes: B2540, B2560
Unified Class Codes: SMEAAB, SMOAAR

957019 B7637729
THIN FILM RESISTOR NETWORKS IN HYBRIDS
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MILITARY DIV. BECKMAN INSTRUMENTS INC., FULLERTON, CA. USA
IEEE. ELECTRONIC INDUSTRIES ASSOC.
26TH ELECTRONIC COMPONENTS CONFERENCE 317-21 1976
26-28 APRIL 1976 SAN FRANCISCO, CALIF., USA
IEEE NEW YORK, USA
THE USE OF THIN FILM PRECISION RESISTOR NETWORKS IN CHIP
FORM IS INCREASING IN HYBRID CIRCUITS. PARTICULARLY IN
DIGITAL-TO-ANALOG CONVERTERS, WHERE THEIR SUPERIOR TOLERANCES,
TEMP. TRACKING AND SMALL SIZE MAKE POSSIBLE BETTER
PERFORMANCE AT HIGHER PACKAGING DENSITIES. THE PERFORMANCE OF
PRECISION THIN FILM CERMET RESISTORS AND NETWORKS AS USED IN
THE CONVERTER IS COMPARED WITH THIN FILM AND IT IS SHOWN THAT
FOR BETTER THAN 10 BIT LINEARITY OVER THE -55 DEGREE TO 125
DEGREE C TEMPERATURE SPAN, THIN FILM PERFORMANCE IS NECESSARY.
ASPECTS OF HYBRID DESIGN WITH CHIP NETWORKS AND CHIP DESIGN
ARE OUTLINED. SEVERAL HYBRID CONVERTERS ARE DISCUSSED TO
ILLUSTRATE THE CHIP NETWORK ADVANTAGES (15 refs.)
Description: THIN FILM CIRCUITS; HYBRID INTEGRATED CIRCUITS;
DIGITAL-ANALOGUE CONVERSION
Identifiers: THIN FILM PRECISION RESISTOR NETWORKS; CHIP
FORM
06
Section Class Codes: B2540, B2560
Unified Class Codes: SMEAAB, SMOAAR

957017 B7637727
LARGE AREA HYBRID-AN ADVANCED MICROELECTRONIC PACKAGING
CONCEPT
KEISTER, F.Z.; HIMMEL, R.P.; SCAPPE, R.Y.
HUGHES AIRCRAFT CO., CULVER CITY, CA. USA
IEEE. ELECTRONIC INDUSTRIES ASSOC.
26TH ELECTRONIC COMPONENTS CONFERENCE 292-9 1976
26-28 APRIL 1976 SAN FRANCISCO, CALIF., USA
IEEE NEW YORK, USA
THE LARGE AREA HYBRID (LAH) IS A FULLY PROVEN
MICROELECTRONIC PACKAGING CONCEPT WHICH EXTENDS CONVENTIONAL
HYBRID TECHNOLOGY TO THE NEXT LEVEL OF ASSEMBLY-THE MODULE
LEVEL. IT COMBINES THE DESIGN AND PACKAGING ADVANTAGES OF
HYBRID MICROCIRCUITS AND PRINTED WIRING BOARDS. FEATURES OF
LAH INCLUDE A LARGE CERAMIC SUBSTRATE (15-SECONDS +4SECONDS
TYPICAL) UPON WHICH RESISTORS AND MULTILAYER THICK FILM
CONDUCTORS ARE DEPOSITED. DISCRETE PACKAGED COMPONENTS MAY BE
ATTACHED AND INTERCONNECTED TO THIS CIRCUITRY. IN ADDITION,
SELECTIVE AREAS OF THE SUBSTRATE MAY BE HERMETICALLY SEALED
(BY A REPAIRABLE PROCESS) TO PROVIDE PROTECTION FOR SENSITIVE
DEVICES AND WIRE BOND INTERCONNECTS. FINALLY, THE SUBSTRATE IS
BONDED TO AN APPROPRIATE STRUCTURAL MEMBER AND INTERCONNECTED
TO OUTSIDE CIRCUITRY BY MEANS OF A CONNECTOR, OR BY HARD
WIRING. THIS PAPER DESCRIBES ADVANTAGES AND DISADVANTAGES OF
LAH AS WELL AS SOME OF THE PROBLEM AREAS EXPERIENCED AND
PROCESS/DESIGN DEVELOPMENTS ACHIEVED. ENVIRONMENTAL TEST
RESULTS ARE PRESENTED FOR DEVELOPMENTAL ENGINEERING MODELS
Description: HYBRID INTEGRATED CIRCUITS; PACKAGING; MODULES;
THICK FILM CIRCUITS
Identifiers: LARGE AREA HYBRID; MICROELECTRONIC PACKAGING
CONCEPT; LARGE CERAMIC SUBSTRATE; DISCRETE PACKAGED COMPONENTS
06
Section Class Codes: B2540, B2560, B2566
Unified Class Codes: SMEAAB, SMOAAR, SMOAAR

SCREENING PROCEDURE FOR ADHESION DEGRADATION DUE TO SOLDER LEACHING IN THICK-FILM HYBRID MICROCIRCUITS
LEVEN, S.S.
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ICF, ELECTRONIC INDUSTRIES ASSOC.
24TH ELECTRONIC COMPONENTS CONFERENCE 205-91 1976
20-20 APRIL 1976 SAN FRANCISCO, CALIF., USA
THE NEW YORK, USA

OP-GRIPES THE RESULTS OF AN EXPERIMENT TO DETERMINE PRACTICAL SCREENING AND QUALITY ASSURANCE PROCEDURES. FOUR ENVIRONMENTAL STRESSES WERE COMPARED TO DETERMINE WHICH ONE TO USE AS A QUALITY ASSURANCE TEST FOR ADHESION DEGRADATION. THE METHOD CONSISTED OF SOLDERING COPPER PINS TO CONDUCTOR PADS ON THE SUBSTRATE, AND THEN PULL-TESTING THE PINS TO THE DESTRUCTION OF THE CONDUCTOR/SUBSTRATE BONDS, BOTH BEFORE AND AFTER ENVIRONMENTAL STRESSES. THIS METHOD PROVIDES A MEASUREMENT OF BOTH TENSILE ADHESION BETWEEN THE SOLDERED CONDUCTOR AND THE SUBSTRATE, AND ADHESION DEGRADATION PRODUCED BY THE ENVIRONMENTAL STRESS. SEVEN THICK-FILM CONDUCTOR MATERIALS AND THREE SOLDER COMPOSITIONS WERE USED, MAKING A TOTAL OF 21 CONDUCTOR/SOLDER SYSTEMS TESTED. ADHESION MEASUREMENTS WERE MADE IMMEDIATELY, AGAIN AFTER A MINIMUM THREE-DAY SHELF LIFE, AND ALSO AFTER EACH ENVIRONMENTAL STRESS. THE MEDIAN FORCE-PER-UNIT AREA VALUES FOR EACH CONDUCTOR/SOLDER/ENVIRONMENTAL STRESS COMBINATION WERE TABULATED AND PLOTTED. THE TEMPERATURE CYCLING STRESS APPEARS TO BE THE MOST PRACTICAL STRESS TO USE AS A SCREENING PROEDURE FOR SOLDER LEACHING. GUIDELINES ARE PRESENTED FOR PERFORMING THE SCREENING TEST AND DETERMINING A RATING FOR ANY MATERIAL COMBINATION (7 Refs)

Descriptores: THICK FILM CIRCUITS; HYBRID INTEGRATED CIRCUITS; ADHESION; CIRCUIT TESTING; SOLDERING; QUALITY CONTROL; ASSURANCE; ENVIRONMENTAL TESTING
Identifiers: ADHESION DEGRADATION; SOLDER LEACHING; QUALITY ASSURANCE; ENVIRONMENTAL STRESSES; TENSILE ADHESION; TEMPERATURE CYCLING STRESS; SCREENING PROCEDURE

Section Class Codes: B2540, B2522, B1263
Unified Class Codes: SWEAAB, SMCACX, AUGDAL

957013 87637723

PERFORMANCE CHARACTERISTICS OF PLATINUM-SILVER CONDUCTOR MATERIALS IN HYBRID MICROCIRCUITS

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ICF, ELECTRONIC INDUSTRIES ASSOC.
24TH ELECTRONIC COMPONENTS CONFERENCE 150-5 1976
20-20 APRIL 1976 SAN FRANCISCO, CALIF., USA
THE NEW YORK, USA

THE RELATIVE PERFORMANCE CHARACTERISTICS OF THICK FILM PLATINUM-SILVER CONDUCTOR MATERIALS FOR HYBRID MICROELECTRONIC APPLICATIONS ARE DESCRIBED. THE PERFORMANCE OF PLATINUM-SILVER

IS COMPARED TO THAT OF PALLADIUM-SILVER IN THE AREAS OF SOLDER PEEL STRENGTH, SOLDER LEACH RESISTANCE, SCREEN PRINTING CHARACTERISTICS, FILM RESISTIVITY, ALUMINUM ULTRASONIC BONDABILITY, AND TEMPERATURE AGED PEEL STRENGTH. THE CHANGES IN METAL PERFORMANCE CHARACTERISTICS DUE TO THE INTERACTION WITH MULTILAYER DIELECTRICS ARE ALSO DISCUSSED. CAPACITORS MADE WITH VARIOUS METAL DIELECTRIC COMBINATIONS ARE DESCRIBED, AND THEIR QUALITY FACTORS COMPARED AT 1 MHZ AND 200 MHZ. THE DATA PRESENTED SHOW THAT NO SINGLE PLATINUM-SILVER IS SUPERIOR IN ALL AREAS TESTED; HOWEVER, SOME METAL-GLASS COMBINATIONS HAVE BETTER ELECTRICAL PROPERTIES THAN OTHERS (7 Refs)

Descriptores: THICK FILMS; HYBRID INTEGRATED CIRCUITS; CAPACITORS; THICK FILM DEVICES
Identifiers: HYBRID MICROCIRCUITS; SOLDER PEEL STRENGTH; SOLDER LEACH RESISTANCE; SCREEN PRINTING CHARACTERISTICS; FILM RESISTIVITY; ALUMINUM ULTRASONIC WIRE BONDABILITY; TEMPERATURE AGED PEEL STRENGTH; MULTILAYER DIELECTRICS; METAL DIELECTRIC COMBINATIONS; PT-AG CONDUCTOR MATERIALS; THICK FILM CONDUCTORS

Section Class Codes: B2540, B2522, B2670
Unified Class Codes: SWEAAB, SMCACX, SMCAR

957012 87637722

ULTRASONIC BONDABILITY OF PLATINUM-SILVER CONDUCTORS IN HYBRID MICROCIRCUITS

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ICF, ELECTRONIC INDUSTRIES ASSOC.
24TH ELECTRONIC COMPONENTS CONFERENCE 86-91 1976
20-20 APRIL 1976 SAN FRANCISCO, CALIF., USA
THE NEW YORK, USA

THE ULTRASONIC BONDING CHARACTERISTICS OF PLATINUM-SILVER CONDUCTOR MATERIALS ARE DESCRIBED. ONE MIL AL (1 PERCENT SI) WIRE WAS ULTRASONICALLY BONDED TO FIVE DIFFERENT PT-AG CONDUCTOR MATERIALS PRINTED AND GOLD CONDUCTOR MATERIALS WERE ALSO USED AS TEST VEHICLES FOR COMPARISON PURPOSES. BOND PULL STRENGTH DATA ARE PRESENTED FOR EACH MATERIAL AT 0, 100, 500, AND 1000 HOURS OF AGING AT 150 DEGREES C. THE DEGRADATION IN BOND STRENGTH DUE TO AGING AT 150 DEGREES C IS CALCULATED FOR EACH MATERIAL FOR 100, 500, AND 1000 HOURS. THE DATA SHOW THAT PT-AG HAS EXCELLENT BONDING CHARACTERISTICS AND IS SUPERIOR TO BOTH PD-AG AND AU IN BOND STRENGTH RETENTION AFTER 1000 HOURS OF AGING AT 150 DEGREES C (9 Refs)

Descriptores: INTEGRATED CIRCUIT PRODUCTION; METALLISATION; HYBRID INTEGRATED CIRCUITS; HYBRID INTEGRATED CIRCUITS; ULTRASONIC APPLICATIONS
Identifiers: HYBRID MICROCIRCUITS; ULTRASONIC BONDING CHARACTERISTICS; PT/AG CONDUCTORS

Section Class Codes: B2540, B2560
Unified Class Codes: SWEAAB, SMCAR

11 of 388) User 674 28oct77

11 of 388) User 674 28oct77

957008 B7637717
PRODUCTION COATING OF VIAS IN ALUMINA SUBSTRATES WITH VACUUM
EVAPORATED CHROMIUM AND GOLD

LOSURE, J.A.
BENDIX CORP., KANSAS CITY, MO, USA
IEEE, ELECTRONIC INDUSTRIES ASSOC.
26TH ELECTRONIC COMPONENTS CONFERENCE 1-8 1976
26-28 APRIL 1976 SAN FRANCISCO, CALIF., USA
IEEE NEW YORK, USA

DESIGN OF A PRODUCTION VACUUM DEPOSITION FIXTURE FOR COATING
3.75 INCH BY 4.50 INCH (95 BY 114 MM) ALUMINA SUBSTRATES WITH
50 NM OF CHROMIUM AND 6 MUM OF GOLD PRESENTED CHALLENGES IN
MEETING GEOMETRY, MECHANICAL, AND COST CONSTRAINTS. THE COATED
SUBSTRATES HAD TO MEET UNIQUE REQUIREMENTS FOR VIA RESISTANCE,
THICKNESS, UNIFORMITY, AND BACKSIDE METALLIZATION ON HYBRID
MICROCIRCUITS. A STUDY OF FIXTURE GEOMETRY VERSUS THE REQUIRED
FILM CHARACTERISTICS RESULTED IN THE DESIGN OF A FIXTURE WHICH
ROTATES THE SUBSTRATES 360 DEGREES ABOUT THEIR LONG AXIS WHILE
SIMULTANEOUSLY ROTATING THEM ABOUT THE DEPOSITION SOURCE IN A
SPHATATE CYCLOID MOTION
DESCRIPTIONS: HYBRID INTEGRATED CIRCUIT PRODUCTION; VAPOUR
DEPOSITION; METALLISATION

Identifiers: ALUMINA SUBSTRATES; PRODUCTION VACUUM
DEPOSITION FIXTURE; RESISTANCE; THICKNESS UNIFORMITY; HYBRID
MICROCIRCUITS; FILM CHARACTERISTICS; PROLATE CYCLOID MOTION;
PRODUCTION COATING; AU COATING; CR COATING; BACKSIDE
METALLISATION

06
Section Class Codes: B2540
Unified Class Codes: SMEAAB

957011 B7637720
PHYSICAL DEFECTS IN THICK-FILM HYBRID SUBSTRATES

FRITZ, L.L.
WESTERN DIV., GTE-SYLVANIA INC., MOUNTAIN VIEW, CA, USA
IEEE, ELECTRONIC INDUSTRIES ASSOC.
26TH ELECTRONIC COMPONENTS CONFERENCE 32-54 1976
26-28 APRIL 1976 SAN FRANCISCO, CALIF., USA
IEEE NEW YORK, USA

DESCRIBES INSPECTION CRITERIA FOR MANUFACTURING THICK-FILM
SUBSTRATES TO HIGH-RELIABILITY STANDARDS AND PHOTOGRAPHICALLY
ILLUSTRATES DEFECTS THAT WERE ENCOUNTERED. PROGRAM STARTUP
INCLUDED MOVING INTO A NEW CLEAN ROOM FACILITY, TRAINING OF
OPERATORS, SPECIFICATION GENERATION AND DOCUMENTATION
PROCEDURES. A MONITORED-LINE CONCEPT WAS USED WITH RELIABILITY
AND QUALITY ASSURANCE PERSONNEL PERFORMING THE MONITORING
FUNCTION (7 REFS)

DESCRIPTIONS: THICK FILM CIRCUITS; HYBRID INTEGRATED CIRCUITS
; INSPECTION; QUALITY CONTROL
Identifiers: INSPECTION CRITERIA; RELIABILITY; QUALITY
ASSURANCE; MONITORING; THICK FILM HYBRID INTEGRATED CIRCUITS

06
Section Class Codes: B2540, B2522, B1263
Unified Class Codes: SMEAAB, SMCCAX, ADGOAL

957010 B7637719
MANUFACTURING PROCESSES FOR HYBRID MICROCIRCUITS CONTAINING
VIAS

REINHOOD, D.; LAUDEL, A.; BLESSNER, P.
BENDIX CORP., KANSAS CITY, MO, USA
IEEE, ELECTRONIC INDUSTRIES ASSOC.
26TH ELECTRONIC COMPONENTS CONFERENCE 18-31 1976
26-28 APRIL 1976 SAN FRANCISCO, CALIF., USA
IEEE NEW YORK, USA

HYBRID MICROCIRCUITS DESIGNED FOR EPDA BY SANDIA
LABORATORIES REQUIRE METALLIZED VIAS TO INTERCONNECT FRONT-SIDE
TANTALUM NITRIDE, CHROMIUM-GOLD THIN-FILM NETWORKS WITH
METALLIZED BACKSIDE GROUND PLANES ON 3.75 INCH (95.2 MM) BY
4.5 INCH (114 MM) ALUMINA SUBSTRATES. MANUFACTURING PROCESSES
WERE DEVELOPED FOR MAKING HOLES IN ALUMINA SUBSTRATES,
METALLIZING SUBSTRATES ON BOTH SIDES AND THROUGH VIAS, DRY
FILM PHOTOLITHOGRAPHING 6 MUM THICK GOLD TO 5 MIL (127 MUM)
LINE WIDTHS AND SPACING, AND DETERMINING VIA QUALITY AND
ACCEPTANCE (4 REFS)

DESCRIPTIONS: INTEGRATED CIRCUIT PRODUCTION; HYBRID
INTEGRATED CIRCUITS; METALLISATION; SUBSTRATES
Identifiers: HYBRID MICROCIRCUITS; METALLIZED BACKSIDE
GROUND PLANES; ALUMINA SUBSTRATES; DRY FILM PHOTOLITHOGRAPHING
; AL OR THIN FILM NETWORK; METALLIZED VIAS

06
Section Class Codes: B2540
Unified Class Codes: SMEAAB

: THICK FILM RESISTORS: ENCAPSULATION
 Identifiers: WIDE RESISTOR RANGE: MOUNTING DISCRETE PASSIVE
 COMPONENTS: ENCAPSULATION TECHNIQUES: RELATIVE COSTS:
 TEMPERATURE RANGES: TEMPERATURE CYCLING APPROVAL TESTS: THICK
 FILM HYBRID ICS: PRECISION RESISTORS: MATERIALS: THICK FILM
 RESISTORS

02
 Section Class Codes: B2540, B2522, B2210, B1266
 Unified Class Codes: SMEAAB, SMCCAX, SEEAAS, AOGIAH
 Language: GERMAN

957001 B7637710
 ADVANCES IN MATERIALS, COMPONENTS, PROCESSES, ENSURE HYBRID
 PROSPERITY IN THE LSI AGE

LYMAN, J.
 ELECTRONICS (USA) VOL.49, NO.15 92-104 22 JULY 1976
 Coden: ELICAD
 DISCUSSES ADVANCES WHICH ACCOMMODATE LSI ICS INCLUDING LARGE
 MULTILAYER HYBRIDS AND ALSO DISCUSSES THE REDUCTION OF COSTS
 BOTH THICK AND THIN-FILM TECHNOLOGY ARE DISCUSSED, AND THEIR
 EXPANSION FROM MILITARY/AEROSPACE FIELDS INTO MORE LUCRATIVE
 HIGH-VOLUME AREAS. THE BASIC ADVANTAGES OF HYBRID TECHNOLOGY
 ARE LISTED.

Descriptores: HYBRID INTEGRATED CIRCUITS: THICK FILM CIRCUITS
 : THIN FILM CIRCUITS
 Identifiers: MATERIALS: COMPONENTS: PROCESSES: MULTILAYER
 HYBRIDS: HYBRID TECHNOLOGY: HYBRID ICS: LSI CHIPS: THICK FILM
 TECHNOLOGY: THIN FILM TECHNOLOGY

02
 Section Class Codes: B2540, B2522, B2524
 Unified Class Codes: SMEAAB, SMCCAX, SMCEAH

957005 B7637714
 SCREEN PATTERN GENERATION BY LASERS
 SUGIYAMA, H.; MUTO, H.; KOUNO, E.; TANURA, T.
 J. JAP. SOC. PRECIS. ENG. (JAPAN) VOL.42, NO.6 478-84
 JUNE 1976 Coden: JUPRAD

THIS PAPER DESCRIBES SCREEN PATTERN GENERATION BY Nd:YAG AND
 AR LASERS. THE SCREEN IS USED IN FABRICATION OF THICK FILM
 HYBRID INTEGRATED CIRCUITS AND CONSISTS OF A STAINLESS STEEL
 WIRE MESH COATED WITH FILLER MATERIAL. A FOCUSED LASER BEAM
 REMOVES THE FILLER MATERIAL WITHOUT THERMALLY DAMAGING THE
 STAINLESS STEEL MESH. EPOXY RESIN, POLYVINYLCHLORIDE, POLYVINYL
 POLYVINYLCHLORIDE FLUORIDE, POLYVINYL ALCOHOL AND POLYVINYL
 ACETATE WERE SELECTED AS THE FILLER MATERIALS. THEY WERE
 EXPERIMENTED WITH AND THE RESULTS WERE OBSERVED. FURTHER
 EXPERIMENTS WERE CONDUCTED FOR POLYVINYL ALCOHOL FILLS WHICH
 SHOWED GOOD LASER MACHINABILITY. IN ORDER TO INVESTIGATE THE
 RELATION BETWEEN LASER POWER AND PATTERN WIDTH, THE SCREEN
 PATTERNS WERE GENERATED ON A MINI-COMPUTER CONTROLLED XY
 TABLE. PRINTED CONDUCTOR PATTERNS HAD GOOD SPECIFICATIONS, AND
 RESULTS SHOWED POSSIBILITIES FOR PRACTICAL APPLICATIONS.
 CONDUCTING THIS SYSTEM TO CAD (COMPUTER AIDED DESIGN) WILL
 FURTHER ENHANCE ITS EFFECTIVENESS. (1 Refs)

Descriptores: INTEGRATED CIRCUIT PRODUCTION: LASER BEAM
 APPLICATIONS: HYBRID INTEGRATED CIRCUITS: THICK FILM CIRCUITS
 Identifiers: LASERS: THICK FILM HYBRID INTEGRATED CIRCUITS:
 STAINLESS STEEL WIRE MESH: LASER BEAM: POLYVINYLCHLORIDE
 : POLYVINYLCHLORIDE FLUORIDE: POLYVINYL ALCOHOL: POLYVINYL
 ACETATE: LASER POWER: PATTERN WIDTH: EPOXY RESIN: SCREEN
 PATTERN GENERATION

02
 Section Class Codes: B2540, B2522, B2080
 Unified Class Codes: SMEAAB, SMCCAX, EGMAAA
 Language: JAPANESE

957003 B7637712
 CONSTRUCTION AND APPLICATION OF THICK-FILM HYBRID CIRCUITS

HEATHERINGTON, D.R.
 NEWARKET TRANSISTORS LTD., NEWARKET, ENGLAND
 ELEKTROP. IND. (GERMANY) VOL.7, NO.5 104-6 MAY 1978
 Coden: ELINDA

GIVES A BRIEF INTRODUCTION AND STATE-OF-THE-ART SURVEY. THE
 MAIN ATTRACTION IS THE WIDE RESISTOR RANGE (1 TO 10⁵ OHM) OF
 HIGH PRECISION (0.5 PERCENT). MATERIALS FOR THESE
 RESISTORS AND FOR CONDUCTORS AND SUITABLE METHODS FOR MOUNTING
 DISCRETE PASSIVE COMPONENTS (E.G. TANTALUM CAPACITORS) AND
 ACTIVE ELEMENTS (TRANSISTORS) ARE DESCRIBED. TYPICAL
 APPLICATIONS IN COMMUNICATIONS, BIOMEDICINE AND ENTERTAINMENT
 ELECTRONICS ARE BRIEFLY TREATED AND ILLUSTRATED. A
 COMPREHENSIVE TABLE, QUOTING VARIOUS ENCAPSULATION TECHNIQUES
 FLOW-SETTING GLASS, PHENOLIC AND EPOXY RESINS, INJECTION
 MOLDINGS, HERMETIC SEALS IN METAL- AND CERAMIC CANS) AND THE
 APPROPRIATE SIZES, RELATIVE COSTS, TEMPERATURE RANGES AND
 TYPICAL CYCLE-APPROVAL TESTS IS GIVEN.

Descriptores: HYBRID INTEGRATED CIRCUITS: THICK FILM CIRCUITS

EXTERNAL LEADS: THIN FILM CIRCUITS: OPTIMUM PLATING THICKNESSES: INITIAL BONDABILITY: BOND STRENGTH: CRACKING: BOND TEST: AU: NI: PLATING THICKNESS EFFECTS

06
Section Class Codes: B2524, B2560
Unified Class Codes: SMCEAH, SMGAAR

956970 B7637659
LOW-COST PRECISION RESISTOR NETWORKS
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DEPT. OF SPECIAL COMPONENTS, AIRCO ELECTRONICS, NIAGARA FALLS, NY, USA

IEEE, ELECTRONIC INDUSTRIES ASSOC.
20TH ELECTRONIC COMPONENTS CONFERENCE 313-16 1976
20-28 APRIL 1976 SAN FRANCISCO, CALIF., USA
IEEE NEW YORK, USA

DESCRIBES THE PRODUCTION OF THIN FILM RESISTOR NETWORKS USING TANTALUM BASED FILMS ON FINE GRAINED CERAMIC SUBSTRATES. CIRCUIT PATTERNS ARE GENERATED BY SUBTRACTIVE ETCHING AND ARE LASER TRIMMED. EXTERNAL LEADS ARE PROVIDED BY THERMOCOMPRESSION BONDING OF RIUDON LEADS. PACKAGING IS COMPLETED WITH A TOP CERAMIC COVER

06
Description: THIN FILM CIRCUITS; PACKAGING: INTEGRATED CIRCUIT PRODUCTION
Keywords: PRECISION RESISTOR NETWORKS; THIN FILM RESISTOR NETWORKS; TANTALUM BASED FILMS; FINE GRAINED CERAMIC SUBSTRATES; SUBTRACTIVE ETCHING; THERMOCOMPRESSION BONDING; RIUDON LEADS; TOP CERAMIC COVER; PACKAGING; EXTERNAL LEADS; LASER TRIMMING

06
Section Class Codes: B2524, B1266
Unified Class Codes: SMCEAH, ADGHAH

956969 B7637658
THE EFFECTS OF GOLD AND NICKEL PLATING THICKNESSES ON THE STRENGTH AND RELIABILITY OF THERMOCOMPRESSION BONDED EXTERNAL LEADS

PAROUSIS, N.T.; HALL, P.M.

DILL TELEPHONE LABS., INC., ALLENTOWN, PA, USA

IEEE, ELECTRONIC INDUSTRIES ASSOC.

20TH ELECTRONIC COMPONENTS CONFERENCE 74-9 1976

20-28 APRIL 1976 SAN FRANCISCO, CALIF., USA

IEEE NEW YORK, USA

EXTERNAL LEADS INTENDED FOR THERMOCOMPRESSION (TC) BONDING TO A4-METALLIZED THIN FILM CIRCUITS ARE TYPICALLY CU-BASED ALLOYS PLATED WITH AU OR A COMBINATION OF NI AND AU. THE OBJECTIVE OF THIS WORK WAS AN EVALUATION OF THE NI/AU SYSTEM TO DETERMINE THE OPTIMUM PLATING THICKNESSES FOR RELIABLE TC BONDING. ALSO INVESTIGATED WAS THE MINIMUM AU THICKNESSES NECESSARY FOR TC BONDING WHEN THE NI DIFFUSION BARRIER WAS OMITTED. FOUR CRITERIA WERE EVALUATED: INITIAL BONDABILITY TO BOND STRENGTH AFTER ACCELERATED AGING; SUSCEPTIBILITY TO CRACKING IN A 90 DEGREE BEND TEST; AND FATIGUE BEHAVIOR. THE TEST VEHICLE WAS A 32-LEAD DUAL-IN-LINE PACKAGE UTILIZING ALUMINA SUBSTRATES METALLIZED WITH TI/PD/AU FILMS AND CU LEAD FRAMES (CDA 102 AND 110) ELECTROPLATED WITH NI AND AU IN THE RATIO OF 0 TO 41 MM AND 0.4 TO 20 MM RESPECTIVELY (0 TO 1630 AND 15 TO 780 MICRONS RESPECTIVELY) (7 ROLs)

06
Description: THIN FILM CIRCUITS; WELDING; RELIABILITY; MECHANICAL STRENGTH
Keywords: STRENGTH; RELIABILITY; THERMOCOMPRESSION BONDED

956967 A762678 B7637656
CHARACTERISTICS OF POLYCRYSTALLINE SILICON INTEGRATED CIRCUITS

GOROHOV, V.A.; MATSON, E.A.; POLYAKOV, C.A.

VZELS, MOSCOW, USSR

THIN SOLID FILMS (SWITZERLAND) VOL.35, NO.2 149-53 15

JUNE 1976 Coden: THSFAP

THE INTERRELATION OF THE MICROSTRUCTURE, MORPHOLOGY AND ELECTROPHYSICAL PROPERTIES OF POLYCRYSTALLINE SILICON THIN FILMS GROWN ON NON-ORIENTED INSULATING SUBSTRATES BY CATHODE GETTER SPUTTERING AND BY CHEMICAL VAPOUR DEPOSITION AND ALSO THE CHARACTERISTICS OF INTEGRATED CIRCUIT ELEMENTS SUCH AS RESISTORS, DIODES, JFETS AND MOSFETS, FABRICATED FROM THESE FILMS BY PLANAR TECHNOLOGY, HAVE BEEN INVESTIGATED. THE ELECTRONIC PROPERTIES OF THESE FILMS ARE INTERPRETED IN TERMS OF A MODEL WHICH TAKES INTO ACCOUNT BOTH THE CRYSTALLITE BOUNDARIES AND VOLUME PROPERTIES. IT WAS FOUND THAT INTEGRATED CIRCUITS FABRICATED FROM POLYCRYSTALLINE SILICON FILMS BY PLANAR TECHNOLOGY HAVE SEVERAL ADVANTAGES OVER MONOCRYSTALLINE SILICON ONES AND POSSIBLE APPLICATIONS ARE DISCUSSED (14 Refs)

02
Description: SILICON; SEMICONDUCTOR THIN FILMS; ELEMENTAL SEMICONDUCTORS; THIN FILM CIRCUITS; THIN FILM DEVICES
Keywords: MICROSTRUCTURE; MORPHOLOGY; ELECTROPHYSICAL PROPERTIES; CATHODE GETTER SPUTTERING; CHEMICAL VAPOUR DEPOSITION; RESISTORS; DIODES; JFETS; MOSFETS; PLANAR TECHNOLOGY; ELECTRONIC PROPERTIES; POLYCRYSTALLINE SI ICs

02
Section Class Codes: A0364, A7000, B2524, A911B, B2420

Unified Class Codes: R0GEAP, NVVAAK, SMCEAH, Z0CKAK

Unified Class Codes: SMCCAX, ETEAAD, SMEAAB

956966 87637655 BATCH BONDED CROSSOVERS FOR THIN FILM CIRCUITS. 1.
DEVELOPMENT
BIRNUS, J.A.; DILED, D.A.
ENGIN. RES. CENTER, WESTERN ELECTRIC CO., PRINCETON, NJ, USA
SOLID STATE TECHNOL. (USA) VOL.19, NO.7 26-31, 44 JULY
1976 CORRENT, STEAR
FOR MORE EFFICIENT UTILIZATION OF THE SUBSTRATE AREA OF A
THIN FILM INTEGRATED CIRCUIT, A CONDUCTOR MAY SPAN, OR PASS
ACROSS, ANOTHER CONDUCTOR BY MEANS OF A "CROSSOVER" THAT
PHYSICALLY SEPARATES AND ELECTRICALY ISOLATES THE SPANNING
CONDUCTOR AND THE UNDERLYING CONDUCTOR. IN THE BATCH BONDING
PROCESS THAT WAS DEVELOPED FOR INCORPORATING THESE NEW
CROSSOVERS WITHIN THIN FILM CIRCUITS, THE CROSSOVERS ARE
GENERATED INDEPENDENTLY OF THE PRODUCTION OF THE CERAMIC
SUBSTRATES AND THEIR CIRCUIT PATTERNS. THIS SEPARATE, PARALLEL
PROCESS ARRANGEMENT HAS RESULTED IN IMPROVED CROSSOVER TEST
YIELD, LESS HANDLING DAMAGE TO COMPLETED CIRCUIT PATTERNS
FURNISHING SIGNIFICANT PRODUCT YIELD ADVANTAGES). SHORTER
TURNAROUND TIME, AND REDUCED IN-PROCESS INVENTORY-ALL OF WHICH
HAVE CONTRIBUTED TO REDUCING THE COST OF HYBRID INTEGRATED
CIRCUITS FOR ELECTRONIC SWITCHING SYSTEMS
Descriptiors: INTEGRATED CIRCUIT PRODUCTION; THIN FILM
CIRCUITS
Identifiers: THIN FILM CIRCUITS; INTEGRATED CIRCUIT; BATCH
BONDED CROSSOVERS
02
Section Class Codes: B2524, B2560
Unified Class Codes: SMCEAH, SMGAAR

956961 87637650 GLASS PASSIVATED THICK FILM CAPACITORS FOR RC CIRCUITS
BRATSCHEM, W.R.
ZENITH RADIO CORP., ELK GROVE VILLAGE, IL, USA
IEEE, ELECTRONIC INDUSTRIES ASSOC.
26TH ELECTRONIC COMPONENTS CONFERENCE 304-12 1976
26-28 APRIL 1976 SAN FRANCISCO, CALIF., USA
IEEE, NEW YORK, USA
THICK FILM CAPACITORS OFFER A HIGH UNIT CAPACITANCE FOR A
FILM TECHNOLOGY. INCREASED HYBRID DESIGN CAPABILITY, A
POTENTIAL INCREASE IN RELIABILITY AND COST ADVANTAGES, THEIR
DISADVANTAGES INCLUDE POOR PHYSICAL PROPERTIES, LIMITED
ELECTRICAL PROPERTIES, DIFFICULT DEVELOPMENTAL WORK AND
COMPLEX PROCESSING. A GLASS FILM PASSIVATION SYSTEM MAY BE
USED TO IMPROVE THE PROPERTIES OF THIN THICK FILM CAPACITORS
AND ENABLE THE DEVELOPMENT OF LOW COST RC NETWORKS. SUCH
NETWORKS CAN BE ECONOMICALLY MADE IF THE FOLLOWING ARE DONE:
USE MULTIPLE CIRCUIT FUNCTIONS IN THE DESIGN; USE LOW COST,
PROCESS INSENSITIVE MATERIALS; USE HIGH CIRCUIT DENSITY AND
MAKE MANY SCREENED COMPONENTS PER PROCESSING OPERATION; USE
AUTOMATED, LOW COST PROCESSING OPERATIONS; AVOID HERMETIC
PACKAGING; AND ACHIEVE HIGH YIELDS (22 Refs)
Descriptiors: THICK FILM CIRCUITS; CAPACITORS; PASSIVATION
Identifiers: RC CIRCUITS; RELIABILITY; COST ADVANTAGES;
06
GLASS FILM PASSIVATION SYSTEM; THICK FILM CAPACITORS
Section Class Codes: B2522
Unified Class Codes: SMCCAX

956962 87637651 MICROWAVE APPLICATIONS OF THICK-FILM TECHNOLOGY
ALLEN, J.L.
ELECTRICAL AND ELECTRONIC SYSTEMS DEPT., UNIV. OF SOUTH
FLORIDA, TAMPA, FL, USA
TITLE
PROCEEDINGS OF THE 1976 IEEE SOUTHEASTCON REGION 3
CONFERENCE ON ENGINEERING IN A CHANGING ECONOMY 219-20
1976
5-7 APRIL 1976 CLEMSON, S.C., USA
IEEE, NEW YORK, USA
A TUTORIAL REVIEW IS PRESENTED DESCRIBING CONSTRAINTS
IMPOSED ON THE UTILIZATION OF THICK-FILM TECHNOLOGY AT
MICROWAVE FREQUENCIES. POTENTIAL ADVANTAGES OF FRITLESS
(REACTIVELY-BONDED) THICK-FILM INKS FOR MICROWAVE APPLICATIONS
ARE DISCUSSED. EMPHASIS IS ON TECHNIQUES AND MATERIALS LIKELY
TO LEAD TO IMPROVED HIGH FREQUENCY PERFORMANCE (6 Refs)
Descriptiors: MICROWAVE INTEGRATED CIRCUITS; THICK FILM
CIRCUITS
Identifiers: TUTORIAL REVIEW; INKS; MICROWAVE APPLICATIONS;
TECHNIQUES; MATERIALS; HIGH FREQUENCY PERFORMANCE; THICK FILM
TECHNOLOGY
07
Section Class Codes: B2522, B1820, B2540

956058 B7637647
PARALLEL CAP WELDING TO THICK FILM METALLIZATION
JOHNSON, D.R.; KNUTSON, R.E.
HYBRID MICROCIRCUIT TECHNOL., SANDIA LABS., ALBUQUERQUE, NM,
USA

IEEE, ELECTRONIC INDUSTRIES ASSOC.
26TH ELECTRONIC COMPONENTS CONFERENCE 66-73 1976
26-28 APRIL 1976 SAN FRANCISCO, CALIF., USA
IEEE NEW YORK, USA

THIS STUDY WAS DIRECTED AT THE PARALLEL GAP WELDING RESPONSE OF A SERIES OF GOLD AND PLATINUM-GOLD THICK FILM CONDUCTOR MATERIALS, WHICH WERE SUBJECTED TO VARIOUS PEAK TEMPERATURE/BEEL SPEED FIRING PROFILES. THE PARALLEL GAP WELDING WAS CONDUCTED USING A VARIETY OF WELD VOLTAGE/PULSE DURATION SETTINGS AND A NOMINAL 0.05 MILLIMETER THICK BY 0.38 MILLIMETER DIAMETER PURE GOLD WIRE. EVALUATION OF THE WELDS WAS DETERMINED THROUGH A DECREASED BEEL TEST. (12 Refs)

958352 87636587

HERMETICITY OF POLYMERIC LID SEALANTS

TRAEGER, R.K. ALBUQUERQUE, NM. USA

SANDIA LABS., ALBUQUERQUE, NM. USA

IEEE ELECTRONIC INDUSTRIES ASSOC.

26TH ELECTRONIC COMPONENTS CONFERENCE 361-7 1976

26-28 APRIL 1976 SAN FRANCISCO, CALIF., USA

IEEE NEW YORK, USA

ORGANIC ADHESIVES ARE USEFUL LID SEALANTS BECAUSE THEY ARE PROTECTED AT LOW TEMPERATURES, ARE INEXPENSIVE, AND ARE EASY TO APPLY. HOWEVER, THERE HAS BEEN RECENT CONCERN ABOUT THE DEGREE OF PROTECTION ORGANICS CAN PROVIDE MOISTURE SENSITIVE COMPONENTS. DATA PRESENTED IN THIS PAPER SHOWS ORGANIC ADHESIVES CAN SEAL PACKAGES WHICH PASS GROSS AND FINE LEAK TESTS, BUT ALLOW WATER VAPOR TO PERMEATE RAPIDLY. PERMEATION MEASUREMENTS ON HYBRID MICROCIRCUIT PACKAGES GAVE SEAL PERMEABILITIES OF $3-7 \times 10^{-5}$ SUP -11/ G/CM-S-TORR. THESE PERMEABILITIES AGREE WITH THOSE LISTED FOR EPOXIES IN THE LITERATURE, WITH THIS PERMEABILITY RANGE AND THE PACKAGE CONFIGURATION USED IN THIS STUDY, THE INTERIOR OF A PACKAGE WILL REACH 50 PERCENT OF THE EXTERIOR HUMIDITY IN 6-10 HOURS (15 Refs.)

Descriptors: HYBRID INTEGRATED CIRCUITS; SEALS (STOPPERS); PACKAGING

Identifiers: POLYMERIC LID SEALANTS; MOISTURE SENSITIVE COMPONENTS; HYBRID MICROCIRCUIT PACKAGES; SEAL PERMEABILITIES; HYBRID IC PACKAGING

02

Section Class Codes: B1266, B2540

Unified Class Codes: ADGHAN, SWEAAB

949337 87632587, C7622162

MIXED-PREDICT TUNING OF HYBRID THIN-FILM FILTERS

LUEBEL, E.J. MALEK, G.

BELL LABS., HOLMDDEL, NJ, USA

IEEE TRANS., CIRCUITS AND SYST. (USA) VOL.CAS-23, NO.7

461-9, JULY 1971, CODING: ICSYBT

TO ACHIEVE HIGHLY ACCURATE FILTER CHARACTERISTICS IN HYBRID INTEGRATED ACTIVE FILTER CIRCUITS, A NEW TUNING PROCEDURE FOR SALIN-AND-KEY TYPE HYBRID FILTERS HAS BEEN DEVELOPED AND IMPLEMENTED. THE PROPOSED TUNING PROCEDURE TAKES INTO ACCOUNT THE LOSS FACTOR OF THIN-FILM CAPACITORS AND NONIDEAL AMPLIFIERS. AN EXAMPLE THAT DESCRIBES THE TUNING PROCEDURE IN DETAIL IS PRESENTED FOR A SECOND-ORDER LOW PASS FILTER. IT IS ALSO APPLICABLE IN THE SAME MANNER TO ALL SECOND-ORDER FUNCTIONS. WITH THE AID OF A COMPUTER, THE PROCEDURE HAS BEEN COMPLETELY AUTOMATED. IT IS THEREFORE WELL SUITED FOR PRODUCTION IN MANUFACTURE. IT IS BEING USED IN ON LINE PRODUCTION OF THIN-FILM ACTIVE FILTERS (6 Refs.)

Descriptors: ACTIVE FILTERS; HYBRID INTEGRATED CIRCUITS; TUNING; THIN FILM CIRCUITS; ENGINEERING APPLICATIONS OF COMPUTERS

Identifiers: HIGHLY ACCURATE FILTER CHARACTERISTICS; HYBRID INTEGRATED; ACTIVE FILTER CIRCUITS; TUNING PROCEDURE; LOSS

FACTOR: THIN-FILM CAPACITORS; NONIDEAL AMPLIFIERS; SECOND ORDER LOW PASS FILTER; COMPUTER; COMPLETELY AUTOMATED; ON LINE PRODUCTION; SALIN AND KEY FILTERS; TUNING BY MEASURE PREDICT METHOD

02

Section Class Codes: B1880, B2540, B2524, C8842

Unified Class Codes: ETRAAM, SWEAAB, SWECAH, WMECAQ

947052 87636241

INTEGRATED CIRCUIT INSTRUMENTATION FOR VEHICLES

GOSS, A.P.

SMITHS INDUSTRIES LTD., LONDON, ENGLAND

IEE, IERE, INST. MECH. ENGRS., SOC. AUTOMOTIVE ENGRS

SYM 0 B5296 162 6

INTERNATIONAL CONFERENCE ON AUTOMOBILE ELECTRONICS 75-B

1976

6-9 JULY 1976 LONDON, ENGLAND

IEE LONDON, ENGLAND

DESPITE THE PRESENT NATURAL RELUCTANCE OF THE MOTOR INDUSTRY TO ACCEPT ELECTRONICS, VEHICLE INSTRUMENTATION HAS BEEN ONE AREA WHERE INTEGRATED CIRCUITS (IC) HAVE BEEN ACCEPTED AND ARE NOW BEING USED IN LARGE QUANTITIES. THIS HAS BEEN BROUGHT ABOUT MAINLY BY THE NEED TO REDUCE THE COMPLEXITY OF MANUFACTURE AND THUS REDUCE COSTS, AT THE SAME TIME TO IMPROVE ACCURACY AND GENERAL SPECIFICATION OF INSTRUMENTATION, VARIOUS WAYS OF DOING THIS HAVE BEEN TRIED IN THE PAST, PARTICULARLY USING OFF THE SHELF IC IN CONJUNCTION WITH OTHER SEMICONDUCTORS AND PASSIVE COMPONENTS MOUNTED ON PC BOARDS. WHILST THIS ACHIEVES THE OBJECTIVES OF IMPROVED PERFORMANCE IT FALLS SHORT OF THE IDEAL OF MINIMUM NUMBER OF PIECE PARTS AND HERCE MINIMUM ASSEMBLY TIMES, AND DOES NOT GIVE LOWEST COST. CUSTOM DESIGNED IC SATISFIES ALL THESE CRITERIA AND WHEN COMBINED WITH THIN FILM CIRCUITS CAN DRASTICALLY REDUCE PIECE PARTS AND IMPROVE RELIABILITY

Descriptors: MONOLITHIC INTEGRATED CIRCUITS; ROAD VEHICLES; TACHOMETERS

Identifiers: VEHICLE INSTRUMENTATION; INTEGRATED CIRCUITS; THIN FILM CIRCUITS; RELIABILITY; IC INSTRUMENTATION

06

Section Class Codes: B5620, B2528, B4210

Unified Class Codes: TREAAH, SACKAK, BECCAB

945005 B7634875
MICROWAVE FREQUENCY COUNTER
MICROWAVE J. (USA) VOL.19, NO.4 33 APRIL 1976 Coden: MCWJAD

THE MODEL 6054B AUTOMATIC MICROWAVE FREQUENCY COUNTER IS DESIGNED FOR MEASUREMENTS FROM 20 MHZ TO 24 GHZ. THE COUNTER INCORPORATES SUCH INNOVATIONS AS A NEW INPUT SAMPLER USING THIN FILM CIRCUITRY AND THE FREQUENCY LOCK AUTOMATIC COMPUTING TRANSFER OSCILLATOR MEASURING TECHNIQUE.

Descriptops: FREQUENCY MEASUREMENT; MICROWAVE MEASUREMENT; COUNTERS; THIN FILM CIRCUITS; AUTOMATIC TEST EQUIPMENT

Identifiers: AUTOMATIC MICROWAVE FREQUENCY COUNTER; 20 MHZ TO 24 GHZ; INPUT SAMPLER; THIN FILM CIRCUITRY; FREQUENCY LOCK AUTOMATIC COMPUTING TRANSFER OSCILLATOR

Section Class Codes: B4270, B4424, B4425
Unified Class Codes: BECRAX, BKCKAZ, BKCMAN

PRE-IF AMPLIFIER, A MAIN IF AMPLIFIER AND A POST-IF AMPLIFIER TO PROVIDE BROADER BANDWIDTH. THIS PAPER DESCRIBES DESIGN CONCENTRATIONS AND PERFORMANCE OF EACH AMPLIFIER, AS WELL AS GENERAL DESIGN CONSIDERATIONS. ALL 1.7 GHZ CIRCUITS ARE CONSTRUCTED ON ALUMINA CERAMIC SUBSTRATES UTILIZING HYBRID IC TECHNOLOGY AND THIN FILM TECHNOLOGY (11 Refs)

Descriptops: MICROWAVE AMPLIFIERS; INTERMEDIATE-FREQUENCY AMPLIFIERS; WIDEBAND AMPLIFIERS; SOLID-STATE MICROWAVE CIRCUITS; HYBRID INTEGRATED CIRCUITS; MICROWAVE LINKS; THIN FILM CIRCUITS; MICROWAVE INTEGRATED CIRCUITS

Identifiers: 1.7 GHZ IF AMPLIFIERS; MAIN IF AMPLIFIER; WIDE AUTOMATIC GAIN CONTROL RANGE; HYBRID IC TECHNOLOGY; THIN FILM TECHNOLOGY; AL/SUB 3/0/SUB 3/1; MICROWAVE AMPLIFIERS; LOW NOISE PRE IF AMPLIFIER; POST IF AMPLIFIER; GUIDED MICROWAVE SYSTEMS; MICROWAVE COMMUNICATION SYSTEMS; MILLIMETRE WAVE COMMUNICATION SYSTEMS

Section Class Codes: B3565, B1820, B2540, B3561, B1840
Unified Class Codes: FEKMAK, ETERAO, SWEAAB, FEKCAL, ETHAAB

945128 B7634667
COMPACT COLOR CAMERAS HIGHLY PROMISING FOR NEWS REPORTING
JLE (JAPAN) NO.112 34 APRIL 1976 Coden: JELEBR

THE THIN FILM HYBRID LSI SYSTEM AMPLIFIER FOR COLOR CAMERA USE IS NO MORE THAN ONE-SIXTH THE SIZE OF A CONVENTIONAL STUDIO CAMERA AMPLIFIER. THE MATERIALS USED ARE ALSO LIGHTER THAN THE CONVENTIONAL ONES, THUS ATTRACTING ATTENTION IS THE POSSIBILITY OF COLOR CAMERAS USING SOLID-STATE IMAGE PICKUP DEVICES INSTEAD OF TUBES. COLOR REPRODUCTION AND SENSITIVITY HAVE NOT YET GROWN OUT OF THE RUDIMENTARY STAGE.

Descriptops: TELEVISION CAMERAS; LARGE SCALE INTEGRATION; HYBRID INTEGRATED CIRCUITS; THIN FILM CIRCUITS; IMAGE SENSORS; COLOR TELEVISION; VIDEO AMPLIFIERS

Identifiers: THIN FILM HYBRID LSI SYSTEM AMPLIFIER; MINIATURIZATION; SOLID STATE IMAGE PICKUP DEVICES; COLOUR TV CAMERAS

Section Class Codes: B3760, B2540, B1266
Unified Class Codes: FKNAAM, SWEAAB, ADGHAH

945157 B7634362
1.7 GHZ IF AMPLIFIERS FOR QUASI-MILLIMETER WAVE RADIO AND GUIDED MILLIMETER WAVE COMMUNICATION SYSTEMS
FUKUDA, S.; MATSUURA, T.; SAITO, Y.; KITAMURA, M.
NIPPON ELECTRIC CO. LTD., TOKYO, JAPAN
N.E.C. RES. AND DEV. (JAPAN) NO.40 72-85 JAN. 1976
Coden: NECRAU

1.7 GHZ IF AMPLIFIERS ARE USED IN QUASI-MILLIMETER WAVE RADIO SYSTEMS AND GUIDED MILLIMETER WAVE SYSTEMS. A QUASI-MILLIMETER WAVE RADIO SYSTEM REQUIRES A LOW NOISE PRE-IF AMPLIFIER TO BEAR THE RELATIVELY HIGH RECEIVING POWER AND A MAIN IF AMPLIFIER TO PROVIDE A WIDE AUTOMATIC GAIN CONTROL RANGE. A GUIDED MILLIMETER WAVE SYSTEM REQUIRES A LOW NOISE

944536 B7633096
ELECTROCHEMICAL TIN-COATING OF TERMINAL TAPE FOR THIN FILM
HYBRID INTEGRATED CIRCUITS
BATEV, K.P.; VACEV, M.D.; MATEEV, A.HR.
ELECTRO. PROC.-ST. AND PRISOPOSTR. (BULGARIA) VOL.11, NO.2
60-1 FEB. 1976 CUGEN: ELPBAY
EXAMINES THE PROCESS OF LAYING AN ELECTROCHEMICAL TIN
COATING ON A TERMINAL TAPE USED IN THE MANUFACTURE OF
THIN-FILM AND HYBRID INTEGRATED CIRCUITS. A COMPARISON HAS
BEEN MADE WITH THE ELECTROCHEMICAL SILVER COATING, WITH
REFERENCE TO THE ADVANTAGES OFFERED BY THE TIN COATING IN THE
PARTICULAR CASE (5 Refs)
Descriptores: ELECTROPLATING; INTEGRATED CIRCUIT PRODUCTION;
THIN FILM CIRCUITS; HYBRID INTEGRATED CIRCUITS
Identifiers: TERMINAL TAPE; HYBRID INTEGRATED CIRCUITS;
ELECTROPLATING SN; THIN FILM ICS
02
Section Class Codes: B2540, B5820, B2524
Unified Class Codes: SMEAH, TMEAAQ, SMCEAH
Language: BULGARIAN

944503 B7633097
BATCH BONDED CROSSOVERS FOR THIN FILM CIRCUITS. II.
PRODUCTION IMPLEMENTATION
GILCH, W.F.; SKOWA, K.W.; WYDRA, W.T.; OZGA, R.U.
DIPNEX INC., WESTBURY, NY, USA.
WESTERN ELECTRIC ENG. (USA) VOL.20, NO.2 11-15 APRIL
1976 CUGEN: WELLEX
FOR P.T.1 SEE IBID., P.2-10. FOLLOWING THE DECISION TO USE
BATCH BONDED CROSSOVERS ON THIN FILM CIRCUITS, A JOINT
MANUFACTURING EVALUATION OF THE CROSSOVERS ON ESS-TYPE CIRCUIT
PACKS WAS BEGUN AT THE ALLENTOWN WORKS AND THE HAWTHORNE WORKS
(1 Refs)
Descriptores: THIN FILM CIRCUITS; ADHESION; JOINING PROCESSES
Identifiers: BATCH BONDED CROSSOVERS; THIN FILM CIRCUITS;
MANUFACTURING EVALUATION; CIRCUIT PACKS; CU POLYIMIDE FILM
LAMINATE; NO FRAMES; ACRYLIC ADHESIVE
02
Section Class Codes: B2521, B1267
Unified Class Codes: SMCEAH, AUGRAI

944502 B7633096
BATCH BONDED CROSSOVERS FOR THIN FILM CIRCUITS. I.
DEVELOPMENT
BURAS, J.A.; DILEO, D.A.
WESTERN ELECTRIC ENG. RES. CENTER, PRINCETON, NJ, USA
WESTERN ELECTRIC ENG. (USA) VOL.20, NO.2 2-10 APRIL
1976 CUGEN: WELLEX
INSTEAD OF BEING GENERATED BY PROCESSES PERFORMED DIRECTLY
UPON THE EASILY DAMAGED CIRCUIT PATTERN, AN ARRAY OF A NEW
TYPE OF CROSSOVER IS BATCH BONDED TO A CIRCUIT IN A SINGLE
OPERATION THAT JOINS, IN EFFECT, TWO PIECEPARTS PREVIOUSLY

PRODUCED AND INSPECTED WITHIN TWO SEPARATE PARALLEL PROCESS
FLOWS (2 Refs)
Descriptores: THIN FILM CIRCUITS; ADHESION; JOINING PROCESSES
Identifiers: NEW TYPE OF CROSSOVER; BATCH BONDED; CIRCUIT;
SINGLE OPERATION; PRODUCED; INSPECTED; PARALLEL PROCESS FLOWS;
THIN FILM CIRCUITS
02
Section Class Codes: B2524, B1267
Unified Class Codes: SMCEAH, AUGRAI

944499 B7633093
PRODUCTION OF THIN FILM STRUCTURES BY ELECTRON BEAM
LITHOGRAPHY
LEDONSKIJ, W.P.; MARGOLIN, W.I.; TIEROK, M.; JAKIMOV, T.N.
FEINGERATE TECH. (GERMANY) VOL.25, NO.5 225-6 MAY
1976 CUGEN: FORTAG
A THERMAL AND A NONTHERMAL VARIANT ARE DISTINGUISHED. THE
LATTER IS INVESTIGATED IN MORE DETAIL. THE SEQUENCE OF THE
PROCESS IS DESCRIBED AND CONCLUSIONS FOR THE TECHNOLOGICAL
APPLICATION ARE DRAWN (3 Refs)
Descriptores: THIN FILM CIRCUITS; INTEGRATED CIRCUIT
PRODUCTION; ELECTRON BEAM APPLICATIONS
Identifiers: THIN FILM STRUCTURES; ELECTRON BEAM LITHOGRAPHY
; PROCESS; THERMAL VARIANT; NONTHERMAL VARIANT
02
Section Class Codes: B2524, B5820
Unified Class Codes: SMCEAH, TMEAAQ
Language: GERMAN

944488 87633092
THIN-FILM HYBRID INTEGRATED CIRCUITS WITH HIGHER ACCURACY OF
THE RATIO OF INTEGRATED RESISTORS
BATEV, K.P.; VACEV, M.D.
ELEKTRON. PROIZV.-ST. AND PRIDROSTROV. (BULGARIA) VOL.11, NO.3
101-3 MARCH 1976. Code: ELPAV
THIN-FILM INTEGRATED CIRCUIT TECHNOLOGY IS DESCRIBED
RESULTING IN HIGH ACCURACY RESISTOR FORMING ESPECIALLY
IMPORTANT IN RESISTOR DIVIDERS. HIGH ACCURACY IS DUE TO
PHOTOLITHOGRAPHIC TECHNIQUES PRODUCING REPETITIVE ALMOST
IDENTICAL FILM OUTLINES. EXPERIMENTAL DIVIDER CIRCUITS
(TIC-0901) PRODUCED SHOWED RATIO ACCURACY OF 0.5PERCENT WITH
INDIVIDUAL RESISTORS TOLERANCES 10PERCENT.
Descriptores: THIN FILM RESISTORS; PHOTOLITHOGRAPHY; HYBRID
INTEGRATED CIRCUITS
Identifiers: HYBRID INTEGRATED CIRCUITS; HIGH ACCURACY
RESISTOR FORMING; PHOTOLITHOGRAPHIC TECHNIQUES; 0.5PERCENT
RATIO ACCURACY; THIN FILM CIRCUITS; EXPERIMENTAL DIVIDER
CIRCUITS; THIN FILM RESISTORS; EXPERIMENTAL RESULTS
02
Section Class Codes: B2524, B2540
Unified Class Codes: SMCEAH, SNEAAB
Language: BULGARIAN

944484 87633076
DO YOU DESIGN YOUR FILM CIRCUIT FOR FABRICATION?
ACKERMAN, W.; REINL, H.
SIEVENS AG. MUNICH, GERMANY
COMPONENTS REP. (GERMANY) VOL.10, NO.5 134-8 DEC. 1975
Code: CRRCC
WITH FILM CIRCUITS, A PROFOUND KNOWLEDGE OF THE FABRICATION
TECHNOLOGY AND THE MANUFACTURING PROCESSES IS INDISPENSABLE
FOR THE EQUIPMENT AND CIRCUIT DESIGNERS IN VIEW OF AN OPTIMAL
DEVELOPMENT AND AN ECONOMIC FABRICATION. THE ARTICLE FURTHER
GIVES THE CIRCUIT DESIGNER IDEAS FOR TECHNICALLY SIMPLE AND
THEREFORE COST EFFECTIVE CIRCUIT CONCEPTS. THE MOST IMPORTANT
DESIGN PRINCIPLES FOR FILM CIRCUITS ARE LISTED IN A GUIDE LINE
(2 Refs.)
Descriptores: THIN FILM CIRCUITS; THICK FILM CIRCUITS;
INTEGRATED CIRCUIT PRODUCTION
Identifiers: FABRICATION TECHNOLOGY; MANUFACTURING PROCESSES
; COST EFFECTIVE CIRCUIT CONCEPTS; DESIGN PRINCIPLES; THICK
FILM CIRCUITS; THIN FILM CIRCUITS; CIRCUIT DESIGN
02
Section Class Codes: B2520
Unified Class Codes: SMCAL

943109 87632417
COMPENSATION OF SOME OPERATIONAL-AMPLIFIER BASED RC-ACTIVE
NETWORKS
WILSON, G.
DIV. ELECTRICAL ENGRG., JAMES COOK UNIV. OF NORTH

QUEENSLAND, TOWNSVILLE, NORTH QUEENSLAND, AUSTRALIA
IEEE TRANS. CIRCUITS AND SYST. (USA) VOL-CAS-23, NO.7
443-6 JULY 1976. Code: ICSYB
MEANS OF COMPENSATING FOR THE FINITE GAIN BANDWIDTH OF
OPERATIONAL AMPLIFIER, WHEN USED IN VOLTAGE CONTROLLED VOLTAGE
SOURCE AND INVERTING INTEGRATOR BLOCKS, ARE DESCRIBED AND ARE
SHOWN TO VIRTUALLY ELIMINATE EXCESS PHASE SHIFTS OVER A
PRESCRIBED FREQUENCY RANGE AS APPLIED TO INTEGRATOR, THE
COMPENSATING TECHNIQUE SIMULTANEOUSLY REDUCES GAIN PERIOD
AND PHASE ERRORS. THE METHODS SHOULD PROVE OF MAXIMUM
ADVANTAGE WHERE TRIMMING OF THE RC ELEMENTS IS DIFFICULT OR
EXPENSIVE VS. IN THIN-FILM REALISATION. IT IS SHOWN THAT THE
OVERALL TEMPERATURE STABILITY OF THE COMPENSATED NETWORK CAN
BE SIGNIFICANTLY IMPROVED. (11 Refs)
Descriptores: OPERATIONAL AMPLIFIERS; ACTIVE NETWORKS;
INTEGRATING CIRCUITS; THIN FILM CIRCUITS
Identifiers: FINITE GAIN BANDWIDTH; OPERATIONAL AMPLIFIER;
VOLTAGE CONTROLLED VOLTAGE SOURCE; INVERTING INTEGRATOR BLOCKS
; ELIMINATE EXCESS PHASE SHIFTS; PRESCRIBED FREQUENCY RANGE;
INTEGRATOR; COMPENSATING TECHNIQUE; GAIN; PHASE ERRORS;
TRIMMING; RC ELEMENTS; THIN-FILM REALISATION; TEMPERATURE
STABILITY; RC ACTIVE NETWORKS
02
Section Class Codes: B1840, B1880, B1890, B2524
Unified Class Codes: E1HAAB, E1TAAC, SMCEAH

937316 87628650, C7619783
SUBNANOSECOND BASE-COUPLED LOGIC CIRCUITS
MEYER, F.
SIEVENS AG. MUNICH, GERMANY
IEEE ASSOC. ELLETRONICA AND ELLETRONICA ITALIANA, ET AL.
SN 0 85296 149 9
1ST EUROPEAN SOLID STATE CIRCUITS CONFERENCE-ESSCIRC
(EXTENDED ABSTRACTS ONLY) 32-3 1975
2-5 SEPT. 1975 CANTERBURY, KENT
IEEE LONDON, ENGLAND
DISCUSSES BASE-COUPLED LOGIC (BCL) A NEW CLASS OF LOGIC
CIRCUIT CONFIGURATION, DESIGNED FOR SUBNANOSECOND PROPAGATION
DELAYS. RISE AND FALL TIMES, IT IS BASED ON A BASE-COUPLED
CURRENT MODE SWITCH. OPERATING FROM A LOWER SUPPLY VOLTAGE
THAN EMITTER-COUPLED LOGIC (ECL), ITS POWER DISSIPATION IS
REDUCED. LOGIC DESIGN IS SIMPLIFIED SINCE MINIMIZED BOOLEAN
EQUATIONS ARE IMPLEMENTED DIRECTLY, WITHOUT TRANSFORMATIONS.
EXPERIMENTAL RESULTS FROM THIN-FILM BCL CIRCUITS ARE DISCUSSED.
Descriptores: LOGIC CIRCUITS; LOGIC GATES; DIGITAL INTEGRATED
CIRCUITS; THIN FILM CIRCUITS
Identifiers: BASE COUPLED LOGIC; BCL; SUBNANOSECOND
PROPAGATION DELAY; ULTRA HIGH SPEED LOGIC; MINIMISED BOOLEAN
EQUATIONS; THIN FILM CIRCUITS; EXPERIMENTAL RESULTS
06
Section Class Codes: C9260, C9220, B2524
Unified Class Codes: XEGAAP, XECAAJ, SMCEAH

933158 B7629574
THIN FILM CIRCUITS IN TRANSMISSION EQUIPMENT
SCHIPPER, C.A.
PHILIPS TELECOMMUN. REV. (NETHERLANDS) VOL.34, NO.1
3B-41 APRIL 1976. Coden: PTLPAW
REVIEWS THE SIGNIFICANCE OF HYBRID THIN FILM CIRCUITS FOR
TRANSMISSION EQUIPMENT AND IT PROVIDES THE SALIENT POINTS OF
THE SPECIFICATIONS AND TECHNOLOGY NEEDED. FURTHERMORE, AN
ELABORATION IS GIVEN OF HOW A MODEL SHOP FOR HYBRID CIRCUITS,
USED AS AN IN-HOUSE FACILITY, MAY SUPPORT THE ELECTRICAL
DEVELOPMENT, ESPECIALLY DIRECT CONTACTS BETWEEN ELECTRONIC
ENGINEERS AND TECHNOLOGISTS COULD LEAD TO OPTIMAL DESIGNS AND
RELATIVELY SHORT LEAD TIMES
Descriptores: DIGITAL COMMUNICATION SYSTEMS; HYBRID
INTEGRATED CIRCUITS; THIN FILM CIRCUITS
Identifiers: HYBRID THIN FILM CIRCUITS; TRANSMISSION
EQUIPMENT; SPECIFICATIONS; TECHNOLOGY; MODEL SHOP; DIGITAL
EQUIPMENT
02
Section Class Codes: B3510, B2540, B2524
Unified Class Codes: FECAAX, SMEAAB, SMCEAH

932662 B7628710
ENGINEERING OF MICROELECTRONIC THIN AND THICK FILMS
JOWETT, C.E.
SBN 0 333 18655 9
1976
MACMILLAN LONDON, ENGLAND
TO ENABLE DESIGNERS, PRODUCTION AND PROJECT ENGINEERS TO USE
THICK AND THIN FILMS TO THE BEST ADVANTAGE, THIS BOOK EXAMINES
THE GENERAL ENGINEERING ASPECT PARTICULARLY WHERE IT WILL LEAD
TO CIRCUIT DESIGN AND PRODUCTION RULES DIFFERENT FROM THOSE
THAT HAVE BECOME COMMON PRACTICE WITH DISCRETE COMPONENT
ASSEMBLIES
Descriptores: THIN FILM CIRCUITS; THICK FILM CIRCUITS; HYBRID
INTEGRATED CIRCUITS
Identifiers: GENERAL ENGINEERING ASPECT; THIN FILMS; THICK
FILMS; MICROELECTRONICS
03
Section Class Codes: B2540, B2524, B2522
Unified Class Codes: SMEAAB, SMCEAH, SMCCAX

932663 B7628711
SCREEN-PRINTED COPPER CONDUCTORS FOR HYBRID CIRCUITRY
BAUDRY, M.; NONNERAYE, M.
LAB. D'ELECTRONIQUE ET DE PHYS. APPLIQUEE, LINEIL-BRENNANES,
FRANCE
IEE ASSOC. ELLETTROTECNICA AND ELLETRONICA ITALIANA, ET AL.
SBN 0 85296 149 9
1ST EUROPEAN SOLID STATE CIRCUITS CONFERENCE-ESSCIRC
(EXTENDED ABSTRACTS ONLY) 84 1975
2-5 SEPT. 1975 CANTERBURY, KENT
IEE LONDON, ENGLAND
DESCRIBES A COPPER PASTE WITH A NON-TRADITIONAL VITREOUS
BINDER (A SEALING MATERIAL FOR DIRECT CERAMIC-TO-METAL SEALS).
AN IMPROVED ORGANIC TEMPORARY BINDER ('VEHICLE'), AND A
SELECTED COPPER POWDER, FIRING SUCH A MATERIAL IS POSSIBLE
EITHER IN NEUTRAL ATMOSPHERE OR IN A REDUCING GAS. ADHESION TO
CERAMIC SUBSTRATES IS REPORTED AND RELATED TO FIRING
CONDITIONS. ELECTRICAL CONDUCTIVITY IS BETTER THAN
CONDUCTIVITY OF GOLD AND HIGH FREQUENCY DATA ARE GIVEN. IN
SPITE OF THE INCREASED COST OF THE ORGANIC VEHICLE, AND OF THE
DEVELOPMENT OF A SPECIAL GLASS BINDER, AND FINAL COST PRICE OF
THE PASTE REMAINS APPROXIMATELY A TENTH OF THAT OF GOLD PASTES
Descriptores: THICK FILM CIRCUITS; HYBRID INTEGRATED CIRCUITS
Identifiers: HYBRID CIRCUITRY; VITREOUS BINDER; ORGANIC
TEMPORARY BINDER; FIRING CONDITIONS; SCREEN PRINTING; CU PASTES
; SCREEN PRINTED CU CONDUCTORS; CERAMIC TO METAL SEALING
MATERIAL; ELECTRICAL CONDUCTIVITY; HF DATA; LOW COST PASTE
06
Section Class Codes: B2540, B2522
Unified Class Codes: SMEAAB, SMCCAX

932661 B7628709
AN EVALUATION OF TECHNIQUES FOR BONDING BEAM-LEAD DEVICES TO
COLD THICK FILMS
OWMES, C.J.
WELDING INST., MICRO WELDING SECTION, CAMBRIDGE, ENGLAND
SOLID STATE TECHNOL. (USA) VOL.19, NO.3 23-8 MARCH
1976 Coden: SSTAP
DISCUSSES THREE TECHNIQUES FOR BONDING BEAM-LEAD DEVICES TO
FITTED AU SCREEN PRINTED THICK FILMS ON CERAMIC SUBSTRATES.
THE AUTHOR DISCUSSES RESULTS OF EVALUATION TESTS ON
THERMOCOMPRESSION (TC) WOBBLING BONDING, TC COMPLIANT BONDING,
AND ULTRASONIC TC WOBBLING BONDING. THE IMPORTANT PARAMETERS AND
THEIR EFFECTS ON RELIABILITY AND BOND STRENGTH ARE DESCRIBED
(10 Refs)
Descriptores: HYBRID INTEGRATED CIRCUITS; BEAM-LEAD DEVICES;
THICK FILM CIRCUITS; JOINING PROCESSES; INTEGRATED CIRCUIT
PRODUCTION
Identifiers: EVALUATION OF TECHNIQUES; AU THICK FILMS; BEAM
LEAD DEVICE BONDING; BONDING TO AU THICK FILMS; BOND
EVALUATION; EXPERIMENTAL RESULTS; HYBRID ICs
02
Section Class Codes: B2540, B2564, B1267
Unified Class Codes: SMEAAB, SMCEAH, ADKAT

932659 B7628707
APPLICATIONS OF THICK FILM HYBRIDS
WHITELAW, D.
BECKMAN INSTRUMENTS LTD., GLENROTHES, SCOTLAND
NEW ELECTRON. (GB) VOL.9. NO.6 66. 69. 71 23 MARCH
1976 Coden: NMEACD
THE MILITARY DEFENCE AEROSPACE MARKET HAS BEEN THE PRIME
AREA FOR HYBRIDS FOR MANY YEARS. THE CONSUMER MARKET HAS
PROVED TO BE EXTREMELY COOLD FOR RESISTOR NETWORKS BUT DUE TO
THE HIGH VOLUME REQUIREMENTS, MONOLITHIC INTEGRATED CIRCUITS
HAVE BEEN FAR MORE COST EFFECTIVE THAN HYBRIDS IN THE MAJORITY
OF CASES. IN THE GENERAL INDUSTRIAL MARKET, HYBRIDS HAVE BEEN
ACTIVE IN SOME SPECIFIC AREAS, NAMELY DATA PROCESSING,
COMMUNICATIONS, AND NAVIGATION
Descripton: THICK FILM CIRCUITS: HYBRID INTEGRATED CIRCUITS
Identifiers: AEROSPACE MARKET: PRIME AREA: HYBRIDS: CONSUMER
MARKET: RESISTOR NETWORKS: INDUSTRIAL MARKET: DATA PROCESSING:
COMMUNICATIONS: NAVIGATION: PACKAGING: ECONOMICS: PRICING:
PRINTED CIRCUITS
02
Section Class Codes: B2540, B2522
Unified Class Codes: SMEAAB, SMCCAX

932657 B7628705
HOW TO RESOLVE THERMAL PROBLEMS IN HYBRID MICROELECTRONICS
KENSUZAN, G.
ELECTRON. AND MICROELECTRON. IND. (FRANCE) NO.218. 24-9
1 APRIL 1976 Coden: ENCIAS
A THEORETICAL INTRODUCTION TO HEAT TRANSFER PROBLEMS IN
THIN-FILM CIRCUITS ALSO CONTAINS SOME EMPIRICAL COEFFICIENTS
AND A TABLE OF THERMAL CONDUCTIVITIES OF VARIOUS RELEVANT
SUBSTANCES. CONSIDERATION IS GIVEN TO HORIZONTAL AND VERTICAL
MOUNTING ON TO A PRINTED CIRCUIT AND TO MOUNTING ON A HEAT
SINK (3 Refs)
Descripton: HYBRID INTEGRATED CIRCUITS: THIN FILM CIRCUITS
Identifiers: HYBRID MICROELECTRONICS: HEAT TRANSFER: THERMAL
CONDUCTIVITIES: MOUNTING: PRINTED CIRCUIT: HEAT SINK: THIN
FILM CIRCUITS
02
Section Class Codes: B2540, B2524
Unified Class Codes: SMEAAB, SMCEAH
Language: FRENCH

932619 B7628649
THIN-FILM TECHNOLOGY
CILINETTI, M.: ROGGIA, D.
TELETTA (ITALY) NO.27 45-50 NOV. 1975 Coden: TELTBC
A GENERAL DESCRIPTION OF THE TECHNOLOGY IS GIVEN AND A
COMPARISON WITH THICK-FILM TECHNOLOGY IS MADE
Descripton: THIN FILM CIRCUITS
Identifiers: GENERAL DESCRIPTION: COMPARISON: THIN FILM
TECHNOLOGY

02
Section Class Codes: B2524
Unified Class Codes: SMCEAH

932618 B7628648
SOLK TERMINATIONS FOR THICK FILM INTEGRATED CIRCUITS
SCHAEFFER, C. AND MIKROTECH. (HUNGARY) VOL.15. NO.2 50-1
FEB. 1976 Coden: FMKWAY
FOR THICK FILM HYBRID INTEGRATED CIRCUITS, LIQUID CRYSTAL
DISPLAYS AND FOR SIMILAR COMPONENTS, THE SOLK CONNECTOR
SYSTEM OF THE FIRM BERG HAS BEEN DEVELOPED. SOME TYPES FROM
THE SYSTEM ARE DESCRIBED
Descripton: THICK FILM CIRCUITS: HYBRID INTEGRATED CIRCUITS
Identifiers: LIQUID CRYSTAL DEVICES: ELECTRIC CONNECTORS
Identifiers: SOLK TERMINATIONS: THICK FILM INTEGRATED
CIRCUITS: THICK FILM HYBRID INTEGRATED CIRCUITS: LIQUID
CRYSTAL DISPLAYS: SOLK CONNECTOR SYSTEM: BERG
02
Section Class Codes: B2524, B2540, B2520
Unified Class Codes: SMCEAH, SMEAAB, SERAAB
Language: HUNGARIAN

932617 B7628647
REALIZATION OF A THREE LAYER THIN FILM RC NETWORK
LOJACONO, R.: SALERNO, M.
ISTITUTO DI COMUNICAZIONI, ELETTRICHE, UNIV. DI ROMA, ROMA,
ITALY
Coden: ALFRAJ VOL.45. NO.3 213-17 MARCH 1976
ANALYSIS OF THREE LAYER THIN FILM DISTRIBUTED RC NETWORK
TECHNOLOGY IS PRESENTED FORMULA AND GRAPHS ARE QUOTED FOR
COMPONENT VALUES WITH EXPERIMENTAL RESULTS. THE PROTOTYPE
CONFIRMED THAT IT IS POSSIBLE TO OBTAIN HIGH ACCURACIES IN
RESPECT OF TIME CONSTANTS AND FREQUENCY (7 Refs)
Descripton: DISTRIBUTED PARAMETER NETWORKS: THIN FILM
CIRCUITS
Identifiers: THREE LAYER THIN FILM, DISTRIBUTED RC NETWORK
ANALYSIS
02
Section Class Codes: B2524
Unified Class Codes: SMCEAH
Language: ITALIAN

932616 B7628646
SOPHISTICATED TECHNIQUES SOLVE INK MANUFACTURING PROBLEMS
VITRIOL, W.A.; HODGE, P.M.
BECKMAN INSTRUMENTS INC., HELIPOT DIV., FULLERTON, CA, USA
SOLID STATE TECHNOL. (USA) VOL.19, NO.3 33-7
1976 Coden: SSTAP
AS THE COMPLEXITY OF HYBRID THICK-FILM INTEGRATED CIRCUITS
AND NUMBER OF MATERIALS INCREASE, A MORE COMPLETE
CHARACTERIZATION IS DEMANDED. THE AUTHOR DESCRIBES EQUIPMENT
USED TO GIVE A TOTAL PICTURE OF THE CHEMICAL AND PHYSICAL
PROPERTIES AT HAND. THE SAME EQUIPMENT THAT IS USED FOR GIVING
A COMPLETE CHARACTERIZATION OF MATERIALS CAN ALSO BE USED FOR
PROBLEM SOLVING. THIS PAPER SHOWS, USING SEVERAL EXAMPLES, HOW
HAVING TOTAL CONTROL OVER THICK FILM MATERIAL PROPERTIES CAN
GIVE A DISTINCT ADVANTAGE IN SOLVING PROCESS AND MATERIAL
PROBLEMS THROUGH THE USE OF DEVELOPMENTAL TOOLS
Description: THICK FILM CIRCUITS; INTEGRATED CIRCUIT
IDENTIFIERS: INK MANUFACTURING PROBLEMS; TOTAL CONTROL;
THICK FILM MATERIAL PROPERTIES; THICK FILM INKS; HYBRID
INTEGRATED CIRCUITS; INK CHARACTERISATION; CHARACTERISATION
TECHNIQUES
02
Section Class Codes: B2522
Unified Class Codes: SMCCAX

932615 B7628645
FILM CIRCUIT ACTIVITY IN THE UK
BISWELL, D.
FILM CIRCUIT DIV., IIT COMPONENTS GROUP, HARLOW, ENGLAND
NEW ELECTRON. (GB) VOL.9, NO.6 62, 64-5 23 MARCH 1976
Coden: NIELAC
MEASURED IN FINANCIAL TERMS THE UK HAS THE LARGEST ACTIVITY
LEVEL IN FILM CIRCUITS OF ALL EUROPEAN COUNTRIES. IT CAN ALSO
BOAST A VERY WIDE APPLICATION RANGE COVERING THE ENTIRE
SPECTRUM FROM CONSUMER PRODUCTS TO MEDICAL AND SPACE
ELECTRONICS. THE PURPOSE OF THIS ARTICLE IS BRIEFLY TO REVIEW
OUR PROGRESS IN EACH FIELD AND COMPARE ITS STATUS WITH THAT OF
THE REST OF THE WORLD. RECENTLY, MECHANISED MANUFACTURING
METHODS AND EXPERIENCE IN MOVING WHERE TO PLACE FILM CIRCUITS
MARKET AREAS
Description: THICK FILM CIRCUITS; THIN FILM CIRCUITS
IDENTIFIERS: FINANCIAL TERMS; WIDE APPLICATION RANGE;
CONSUMER PRODUCTS; MEDICAL; SPACE ELECTRONICS; MECHANISED
MANUFACTURING METHODS; LARGE EXPLOITABLE MARKET; UK MARKETING
ACTIVITY; THICK FILM CIRCUITS; AVIONICS; THIN FILM CIRCUITS
02
Section Class Codes: B2522, B2524
Unified Class Codes: SMCCAX, SMCEAH

932618 B7628084
HIGH LEVEL MIXERS GO THIN FILM WITH COMPLEMENTARY LO DRIVE
CHEADEL, D.L.
WATKINS-JOHNSON CO., PALO ALTO, CA, USA
MICROWAVE SYST. NEWS (USA) VOL.6, NO.1 72-7 FEB.-MARCH
1976 Coden: MWSNAG
SMALL SIZE, IMPROVED HIGH FREQUENCY 3RD ORDER SUPPRESSION
AND HIGHER RF INPUT POWER HANDLING CAPACITY ARE CHIEF FEATURES
IN NEW FAMILY OF MIXERS. CASCADABLE AMPLIFIERS PROVIDE +20 DBM
LO DRIVE IN 10-B PACKAGE (2 Refs)
Description: MIXERS (CIRCUITS); RADIOFREQUENCY AMPLIFIERS;
THIN FILM CIRCUITS
Identifiers: IMPROVED HIGH FREQUENCY; 3RD ORDER SUPPRESSION;
RF INPUT POWER HANDLING; 10-B PACKAGE; HIGH LEVEL MIXERS; THIN
FILM CIRCUITS; CASCADABLE AMPLIFIERS; LOCAL OSCILLATOR DRIVE
AMPLIFIERS
02
Section Class Codes: B1860, B3740, B2524
Unified Class Codes: ETMAAG, FKGAAM, SMCEAH

921946 B7625681
CONSIDERATIONS ON THE DESIGN OF A NEW PCM MULTIPLEX TERMINAL
LUCHETTI, M.; VAGLIANI, F.C.
TELETRA, DIGITAL TRANSMISSION AND WIRE COMMUNICATION DIV.,
VIMERCATE, ITALY
IEEE, ET AL.
1976 INTERNATIONAL CONFERENCE ON DIGITAL COMMUNICATIONS
9-11 MARCH 1976 ZURICH, SWITZERLAND
IEEE NEW YORK, USA
DESCRIBES THE PROJECT CHOICES AND SOME TECHNICAL AND
FUNCTIONAL FEATURES OF A NEW PCM MULTIPLEX TERMINAL FOR 30
SPEECH CHANNELS. THE USE OF NEW COMPONENTS AND TECHNOLOGIES
HAS GREATLY INFLUENCED DESIGN AND STRUCTURE, PERMITTING A
GREATER RELIABILITY AND COMPACTNESS. LSI, CMOS, TTLs, THIN
AND THICK FILM CIRCUITS AND BEAM LEAD DEVICES HAVE BEEN USED
WHICH MAKE CUSTOM INTEGRATED CIRCUITS UNNECESSARY (IN Refs)
Description: MULTIPLEXING EQUIPMENT; PULSE-CODE MODULATION
LINKS; DIGITAL INTEGRATED CIRCUITS; LARGE SCALE INTEGRATION;
TIME DIVISION MULTIPLEXING
Identifiers: PCM MULTIPLEX TERMINAL; 30 SPEECH CHANNELS;
DESIGN; STRUCTURE; RELIABILITY; COMPACTNESS; LSI; CMOS; TTL;
THICK FILM CIRCUITS; BEAM LEAD DEVICES; THIN FILM CIRCUITS
06
Section Class Codes: B3550, B3420, B1870, B2528
Unified Class Codes: FEGAAC, FCEAN, E1NAAP, SMCKAK

SHOWN. A DESCRIPTION IS GIVEN OF THE MODE OF OPERATION AND TYPICAL THERMOGRAMS. A MICROCIRCUIT AND A TRANSISTOR JUNCTION INDICATE ITS PERFORMANCE. FIELD OF VIEW IS 2-2 MM. TIME TO PRODUCE IMAGE 2-5 MIN. TEMPERATURE RANGE 20-150 DEGREES C. RESOLUTION OF 10 MM IS CLAIMED. (2 Refs)

DESCRIPTORS: MICROSCOPES; INFRARED IMAGING; INTEGRATED CIRCUIT TESTING; HYBRID INTEGRATED CIRCUITS; PRINTED CIRCUITS IDENTIFIERS: MICROELEMENT INSPECTION; OPTICAL HEAD; INTEGRATED MICROCIRCUITS; MULTILAYER PRINTED CIRCUIT BOARDS; MODE OF OPERATION; THERMOGRAMS; TRANSISTOR JUNCTION; IN SCANNING MICROSCOPES HYBRID MICROCIRCUITS

02
Section Class Codes: A0645, A0620, B2520, B2540, B2230, B1269

Unified Class Codes: BOHNAS, BGFAM, SMCAAL, SMEAAB, SEMAAM, ADGMAE

920860 B7624513
DESIGNING AND REALISING ACTIVE THICK-FILM RC FILTERS

RUPP, W.
INST. FÜR NETZWERKTHEORIE UND SCHALTUNGSTECH., TECH. UNIV., MÜNCHEN, GERMANY

NTG-FACHBER. (GERMANY) VOL.51 85-9 1975
DESCRIBES THE STEPS OF A DESIGN METHOD OPTIMISING RESPONSE AND DIMENSIONING THE CIRCUIT) AND THE ADJUSTMENTS TO THE THICK-FILM FILTER AFTER PRODUCTION (USING A NETWORK ANALYSER). AS AN EXAMPLE THE REALISATION OF A FILTER BANK (96 BP FILTERS FOR 20KHZ - 15 KHZ) IS BRIEFLY DESCRIBED (8 Refs)

DESCRIPTORS: ACTIVE FILTERS; THICK FILM CIRCUITS IDENTIFIERS: ACTIVE THICK FILM RC FILTERS; DESIGN

02
Section Class Codes: B1800, B2522

Unified Class Codes: EIRAAM, SAGCAX
LANGUAGE: GERMAN

921250 B7624925
FUSED SILICA: A BETTER SUBSTRATE FOR (MICROWAVE) MIXERS?

FRESCENZI, E.J., JR.; MARKI, F.A.; KENNEDY, W.
SOLID STATE MATINS-JOHNSON CO., PALO ALTO, CA, USA
MICROWAVES (USA) VOL.15, NO.1 34-5, 39-40, 43 JAN.

1976 Codon: NCRMAR

DISCUSSES THE ADVANTAGES OF FUSED SILICA, A MATERIAL COMMONLY USED IN OPTICS, FOR U-BAND MIXER APPLICATIONS. IT ALLOW. THIN-FILM CIRCUITS TO BE BUILT ON RELATIVELY LOW DIELECTRIC CONSTANT SUBSTRATES (7 Refs)

DESCRIPTORS: SUBSTRATES; MICROWAVE INTEGRATED CIRCUITS; THIN FILM CIRCUITS; MIXERS (CIRCUITS); SOLID-STATE MICROWAVE CIRCUITS

IDENTIFIERS: FUSED SILICA; SUBSTRATES; MICROWAVE MIXERS; J-BAND; LOW DIELECTRIC CONSTANT; THIN FILM CIRCUITS; MICROWAVE INTEGRATED CIRCUITS

02
Section Class Codes: B2540, B1860, B1820, B2524

Unified Class Codes: SMEAAB, ETMAAG, ETEAAD, SMCEAH

921224 B7624895

THE SQUEEGEE IN PRINTING OF ELECTRONIC CIRCUITS

DUBEY, G.C.
SOLID STATE PHYS. LAB., DELHI, INDIA VOL.14, NO.5-6 427-9
MICROELECTRON. AND RELIAB. (GB) 1975 Codon: NCRLAS

THE SQUEEGEE IS AN IMPORTANT TOOL IN SCREEN PRINTING OF THIN FILM CIRCUITS TO CONTROL THE UNIFORMITY IN PRINT THICKNESS (WHICH SUBSEQUENTLY CONTROLS THE COMPONENT VALUES). THE PAPER COMPARES THE VARIOUS MATERIALS AND SHAPES OF SQUEEGEE USED IN SCREEN PRINTING. IT HAS BEEN SHOWN THAT POLYURETHANE OF CONSIDERABLE HARDNESS AND MODULUS IN SQUARE EDGE SHAPE IS THE BEST MATERIAL FOR USE AS A SQUEEGEE IN OFF CONTACT PRINTING (9 Refs)

DESCRIPTORS: THICK FILM CIRCUITS; INTEGRATED CIRCUIT PRODUCTION

IDENTIFIERS: SQUEEGEE; SCREEN PRINTING; THICK FILM CIRCUITS; POLYURETHANE; OFF CONTACT PRINTING

02
Section Class Codes: B2522

Unified Class Codes: SAGCAX

921218 A7650818, B7624888

INFRARED SCANNING MICROSCOPE (FOR MICROELEMENT INSPECTION)

OYCHARENKO, G.M.; SOBOLEVA, N.F.; SHABASHEV, D.K.
OPT.-NEKH. PROM.-ST. (USSR) VOL.42 31-3 OCT. 1975
Codon: OPMPAQ

Trans of: SOV. J. OPT. TECHNOL. (USA) VOL.42, NO.10

588-90 OCT. 1975 Codon: SUOTBH

A PHOTOGRAPH AND A SCHEMATIC OF THE OPTICAL HEAD OF THE MICROSCOPE, DEVELOPED FOR THE TESTING OF HYBRID AND INTEGRATED MICROCIRCUITS AND MULTILAYER PRINTED CIRCUIT BOARDS ETC., ARE

920726 B7624351
A FEEDFORWARD S-BAND MIC AMPLIFIER SYSTEM
HSIEN, C.-C.
DEPT. OF ELECTRICAL ENGRG. AND COMPUTER SCI., UNIV. OF SANTA
CLARA, SANTA CLARA, CA, USA
IEEE J. SOLID-STATE CIRCUITS (USA) VOL.5011, NO.2 271-8
APRIL 1976 CODE: JUSDC
A 2.2 GHZ HIGH-POWER FEEDFORWARD AMPLIFIER SYSTEM HAS BEEN
DESIGNED AND FABRICATED, WHICH HAS AN RF GAIN OF 30 DB AND
DELIVERS AN OUTPUT POWER OF 1.25 W WITH ALL IN DISTORTION
PRODUCTS AT LEAST DOWN TO 1.25 W WITH ALL IN DISTORTION
AMPLIFIERS AND PASSIVE CIRCUIT COMPONENTS USED IN THIS SYSTEM
ARE ALL REALISED IN THIN-FILM HYBRID FORM. THE THEORETICAL
DEVELOPMENT OF THE SYSTEM IS DESCRIBED. THE RESULT OF THE
TEMPERATURE STABILITY TESTS IS GIVEN. THE COMPUTER
OPTIMISATION TECHNIQUE WITH MULTIBAND WEIGHTING FUNCTIONS USED
THROUGHOUT THE AMPLIFIER DESIGN PROCESS IS PRESENTED. FINALLY,
PRACTICAL APPLICATIONS AND A COMPARISON OF THE ADVANTAGES AND
DRAWBACKS OF THIS (FEEDFORWARD) AMPLIFIER SYSTEM WITH THOSE
PRODUCED BY USING THE CONVENTIONAL (BACK-OFF) APPROACH ARE
DISCUSSED (14 Refs)
Descriptiors: MICROWAVE INTEGRATED CIRCUITS; THIN FILM
CIRCUITS; HYBRID INTEGRATED CIRCUITS; MICROWAVE AMPLIFIERS;
POWER AMPLIFIERS
Identifiers: FEEDFORWARD S-BAND MIC AMPLIFIER SYSTEM; RF
GAIN; OUTPUT POWER; IN DISTORTION PRODUCTS; POWER AMPLIFIERS;
TEMPERATURE STABILITY TESTS; COMPUTER OPTIMISATION TECHNIQUE;
MULTIBAND WEIGHTING FUNCTIONS; THIN FILM HYBRID FORM; 2.2 GHZ
HIGH POWER AMPLIFIER SYSTEM
02
Section Class Codes: B1820, B1840, B2540, B2524
Unified Class Codes: ETEAAB, ETHAAB, SNEAAB, SMCEAH

920714 B7624338
DESIGN, FABRICATION, AND APPLICATION OF UNIFORMLY
DISTRIBUTED RC NETWORKS FOR USE IN ELECTRONIC CIRCUITS
KAVANAUGH, M.F.
UNIV. MISSOURI, ROLLA, USA
THE INDEFINITE ADMITTANCE MATRIX FOR THE DOUBLE-RESISTIVE
AND SINGLE-RESISTIVE UNIFORMLY DISTRIBUTED RC NETWORKS IS USED
AS THE STARTING POINT. THE RESULTS ARE APPLIED TO REDUCTION IN
THE NUMBERS OF ELEMENTS NEEDED FOR RC-COUPLED AMPLIFIERS,
MULTIVIBRATOR CIRCUITS, HIGH-Q (10 TO 1500) BAND-PASS
AMPLIFIERS, AND PHASE-SHIFT OSCILLATORS. THE PROCEDURES FOR
DESIGNING AND FABRICATING UNIFORMLY DISTRIBUTED RC NETWORKS
ARE REVIEWED IN DETAIL. A REVIEW OF BOTH THIN-FILM FABRICATION
BY VACUUM DEPOSITION AND SEMICONDUCTOR FABRICATION BY
DIFFUSION IS INCLUDED
Descriptiors: DISTRIBUTED PARAMETER NETWORKS; THIN FILM
CIRCUITS; AMPLIFIERS; MULTIVIBRATORS; OSCILLATORS; ADMITTANCE
IDENTIFIERS: UNIFORMLY DISTRIBUTED RC NETWORKS; ELECTRONIC
CIRCUITS; INDEFINITE ADMITTANCE MATRIX; MULTIVIBRATOR CIRCUITS
02
Section Class Codes: B1820, B1840, B2540, B2524
Unified Class Codes: ETEAAB, ETHAAB, SNEAAB, SMCEAH

10
Section Class Codes: B1650, B2524, B1840, B1850
Unified Class Codes: ETEAAB, SMCEAH, ETHAAB, ETKAAR
Availability: UNIV. MICROFILMS, ANN ARBOR, MICH., USA. ORDER
NO. 75-22322

909279 B7622041
ACTIVE TONE CONTROL DEVICE IN TANTALUM THINFILM TECHNOLOGY
BOSSELMANN, W.
SIEMENS AG, MUNCHEN, GERMANY
COMPONENTS REP. (GERMANY) VOL.10, NO.4 104-7 OCT. 1975
CODE: CMCE3
DISCUSSES TONE CONTROL NETWORKS USED IN HI FI CLASSIFIED AF
AMPLIFIERS. ACTIVE RC FILTERS OF TA-THIN FILM TECHNOLOGY OFFER
THE MOST ADAPTABILITY BECAUSE OF THE CENTRE FREQUENCY IS
CONTINUOUSLY VARIABLE. THE ARTICLE EXPLAINS THE FUNCTION AND
DESIGN OF SUCH ACTIVE FILTER NOT WITHOUT CONSIDERING PASSIVE
RC- AND LCR CIRCUITS. THE THINFILM CIRCUIT LAYOUT AND
REGULATING POSSIBILITIES OF THIS MODERN TONE CONTROL MEET HIGH
REQUIREMENTS (1 Refs)
Descriptiors: AUDIO-FREQUENCY AMPLIFIERS; ACTIVE FILTERS;
THIN FILM CIRCUITS; TANTALUM
Identifiers: ACTIVE FILTER; CIRCUIT LAYOUT; HI FI AF
AMPLIFIERS; ACTIVE TONE CONTROL NETWORKS; TA THIN FILM IC;
ADJUSTABLE CENTRE FREQUENCY; ACTIVE RC FILTERS; CIRCUIT
DIAGRAMS
02
Section Class Codes: B3760, B1840, B1880, B2524
Unified Class Codes: FRAAAB, ETHAAB, ETRAAB, SMCEAH

907989 B7620559 CHIP CAPACITOR MARKING
 SPARKES, R.
 VITRONON LTD., HIGH WYCOMBE, ENGLAND Codon: EONAN
 WITH THE INCREASING USE OF MONOLITHIC CERAMIC CAPACITORS FOR
 HYBRID MICROCIRCUIT APPLICATIONS IN INDUSTRY THE NEED FOR A
 SUITABLE METHOD OF CHIP CAPACITOR MARKING HAS BEEN
 IDENTIFIED. THE PAPER EXPLAINS IN BRIEF THE DEVELOPMENT OF
 SUCH A MARKING SYSTEM, WHICH IS NOW IN USE IN A WIDE VARIETY
 OF APPLICATIONS. THE SYSTEM IS OPTIMUM IN TERMS OF SIMPLICITY
 AND PRACTICALITY. IT PROVIDES CHIP USERS WITH A POSITIVE WAY
 TO IDENTIFY THE CAPACITANCE VALUE OF A CHIP CAPACITOR
 Descriptors: HYBRID INTEGRATED CIRCUITS; CAPACITORS;
 MONOLITHIC INTEGRATED CIRCUITS
 Identifiers: MONOLITHIC CERAMIC CAPACITORS; CHIP CAPACITOR
 MARKING; HYBRID MICROCIRCUITS
 02
 Section Class Codes: B2540, B252B, B2670
 Unified Class Codes: SMEAAB, SMCKAK, SNMAAR

907995 B7620556 INVESTIGATIONS INTO PRODUCTION STANDARDS FOR THICK FILM
 HYBRID CIRCUITS
 CASTRACASI, G.; GORLA, C.
 ALTA FREQ. (ITALY) VOL.45, NO.1 77-81 JAN. 1978
 Codon: ALFRAJ
 THE CIRCUITS DISCUSSED COVER A WIDE RANGE, FROM SIMPLE
 RESISTIVE NETWORKS TO VERY COMPLEX HYBRID CIRCUITS, FOR D.C.
 OPERATION AND AT SEVERAL HUNDRED MHZ. THE TOLERANCE ON THE
 PASSIVE ITEMS BEING NEVER MORE THAN -OR- 2PERCENT, AND THE
 NOISE LESS THAN 1 MU/V. SUCH CIRCUITS REQUIRE EXPENSIVE
 PASTES TO PRODUCE THE CONDUCTING, RESISTIVE AND INSULATING
 COMPONENTS WHICH HAVE TO BE APPLIED AUTOMATICALLY. BESIDES THE
 STANDARDISATION OF COMPONENTS IT IS ALSO NECESSARY TO
 STANDARDISE METHODS OF PRODUCTION. DESCRIBES INVERSION
 SOLDERING TECHNIQUES, THE STANDARDISATION OF FIVE DIFFERENT
 TYPES OF TERMINALS WITH AUTOMATIC MACHINERY FOR FITTING THEM.
 DISCUSSES THE STANDARDISATION OF COMPONENT DESIGN AND METHODS
 OF ASSEMBLY USING CEMENTS WHICH FACILITATE ASSEMBLY AT THE
 RATE OF 2000 COMPONENTS PER HOUR, AND DEALS FINALLY WITH
 STANDARD METHODS OF CIRCUIT DESIGN
 Descriptors: THICK FILM CIRCUITS; HYBRID INTEGRATED CIRCUITS
 Identifiers: THICK FILM CIRCUITS; STANDARDS
 PRODUCTION STANDARDS; LOW TOLERANCES; LOW NOISE LEVEL;
 COMPONENTS STANDARDISATION; IMMERSION SOLDERING; ASSEMBLY;
 STANDARD CIRCUIT DESIGNS
 02
 Section Class Codes: B2540, B2522
 Unified Class Codes: SMEAAB, SMCCAX
 Language: ITALIAN

907992 B7620562 SOLDERLESS THICK FILM HYBRIDS
 HETHERINGTON, D.
 NEWARKET TRANSISTORS LTD., NEWARKET, ENGLAND Codon:
 ELTHCL
 PROJECTION RESISTANCE WELDING HAS BEEN USED FOR MANY YEARS
 FOR HERMETICALLY SEALED TO18, TO5, TO9 AND TO3 SEMICONDUCTOR
 PACKAGES BUT IT IS ONLY RECENTLY THAT TECHNIQUES HAVE BEEN
 DEVELOPED THAT MAKE THE PROJECTION WELDING OF LARGER
 RECTANGULAR PACKAGES FOR HYBRID CIRCUITS A VIABLE PRODUCTION
 METHOD. BY USING THESE NEW WELDING TECHNIQUES FOR THE
 PACKAGING AND EPOXIES FOR THE ATTACHMENT OF ACTIVE DEVICES A
 METHOD OF MANUFACTURING THICK FILM HYBRID CIRCUITS WITHOUT THE
 USE OF SOLDER HAS BEEN DEVELOPED
 Descriptors: INTEGRATED CIRCUIT PRODUCTION; THICK FILM
 CIRCUITS; HYBRID INTEGRATED CIRCUITS
 Identifiers: PROJECTION WELDING; METHOD OF MANUFACTURING;
 SOLDERLESS THICK FILM HYBRIDS
 02
 Section Class Codes: B2540, B2522
 Unified Class Codes: SMEAAB, SMCCAX

907085 07620555
A CONSISTENT TECHNIQUE FOR ASSEMBLING THIN FILM HYBRID CIRCUITS
COVIA, R.
ALTA, FEO, (ITALY) VOL.45, NO.1 72-77 JAN. 1976
Codon: ALFRAJ
ENCAPSULATED ITEMS, ARE MOUNTED ON AREAS ELECTRICALLY GOLD PLATED, TO A DEPTH OF 4 TO 5 MUW, USING EUTECTIC AU-SI SOLDERING ALLOYS AT 300 DEGREES. AIDED BY NITROGEN JETS, AT 400 DEGREES. EPOXY RESIN METHODS OF ASSEMBLY HAVE BEEN INVESTIGATED BUT, DESPITE SOME ADVANTAGES, THEY CAUSE HIGH THERMAL AND ELECTRICAL RESISTANCE. THEY MAY CAUSE CORROSION AND ARE NOT SUITABLE FOR SMALL ITEMS LESS THAN 0.35 MM/SUP 2/. ULTRASONIC SOLDERING, WITH ALUMINIUM THREADS CONTAINING 10 PERCENT SILICON HAS GIVEN VERY SATISFACTORY RESULTS. DESCRIBES METHODS OF ASSEMBLING CERAMIC CAPACITORS BY IMMERGING THEM IN A BATH OF SOLDER PRIOR TO SECURING THEM TO THE SUBSTRATE BY REMELTING THE SOLDER AT THE TERMINALS AND METHODS OF MANUFACTURING AND ASSEMBLING THE OUTPUT TERMINALS. DESCRIBES THE PROTECTION ARRANGEMENTS, CLEANING IN ALCOHOL VAPOUR, COATING WITH SILICONE RESIN AND POLYMERISATION IN AN OVEN, PRIOR TO ENCAPSULATION WITH EPOXY RESIN CONTAINING QUARTZ. FINALLY LISTS THE TESTS PERFORMED AFTER ASSEMBLY
Descripton: THIN FILM CIRCUITS; HYBRID INTEGRATED CIRCUITS; INTEGRATED CIRCUIT PRODUCTION
Identifiers: THIN FILM CIRCUITS; HYBRID CIRCUITS; CONSISTENT ASSEMBLING TECHNIQUE; GOLD PLATED; SOLDERING ALLOYS; NITROGEN JETS; ULTRASONIC SOLDERING; POLYMERISATION; ENCAPSULATION
02
Section Class Codes: B2540, B2524
Unified Class Codes: SMEAAB, SMEAH
Language: ITALIAN

907159 07619954
HYBRID THIN-FILM PULSE AMPLIFIER WITH SUBNANOSECOND RISE TIME
KALISZ, J.; KAZMIERSKI, T.; MROCKOWSKI, Z.
WUJKOWA AKADEMIA TECHNICZNA, WARSAW, POLAND
ELEKTRONIKA (POLAND) VOL.17, NO.1 32-4 1976 Codon: ENR12
THE DESIGN OF THE HYBRID THIN-FILM PULSE AMPLIFIER WITH 26 DB GAIN AND 400 PS RISE TIME IS PRESENTED. DESCRIPTION OF CONSTRUCTION AND TECHNOLOGY AND AN APPLICATION EXAMPLE IN A HIGHLY SENSITIVE 550 MHZ FREQUENCY DIVIDER ARE GIVEN (B Refs)
Descripton: PULSE AMPLIFIERS; THIN FILM CIRCUITS; HYBRID INTEGRATED CIRCUITS; FREQUENCY DIVIDERS
Identifiers: SUBNANOSECOND RISE TIME; PULSE AMPLIFIER; CONSTRUCTION; TECHNOLOGY; HYBRID CIRCUIT; THIN FILM CIRCUIT; 26 DB GAIN; 400 PS RISE TIME; 550 MHZ FREQUENCY DIVIDER
02
Section Class Codes: B1840, B1870, B2524, B2540
Unified Class Codes: ETMAAB, ETMAAP, SMEAH, SMEAB
Language: POL

907227 07619551
FINANCIAL CONSCIOUSNESS IN THE MANUFACTURING OF THIN-FILM HYBRIDS
LENINGTON, R.L.
HYCOMP INC., MAYNARD, MA, USA
IEEE TRANS. MANUF. TECHNOL. (USA) VOL. MET-5, NO.1 13-17 MARCH 1976 Codon: IETMBC
ACHIEVEMENT OF HIGH YIELDS AND LOW PRODUCTION COST ARE ALMOST AN IMPOSSIBILITY IN A THIN-FILM HYBRID MICROCIRCUIT OPERATION WITHOUT THE COMBINATION OF A STRONG QUALITY ASSURANCE PROGRAM AND AN ACCURATE COST ACCOUNTING SYSTEM. THE PROBLEMS ENCOUNTERED AS COMPONENT SIZE GETS SMALLER MAKING IT INCREASINGLY DIFFICULT TO MAINTAIN CIRCUIT INTEGRITY AND RESOLUTION ARE OUTLINED. THE NECESSITY OF MAINTAINING PROCESS CONTROLS WITH WELL EXECUTED QUALITY AND COST PROGRAMS ARE REVIEWED
Descripton: INTEGRATED CIRCUIT PRODUCTION; THIN FILM CIRCUITS; HYBRID INTEGRATED CIRCUITS; QUALITY CONTROL
Identifiers: COST ACCOUNTING SYSTEM; THIN FILM HYBRIDS; QUALITY CONTROL
02
Section Class Codes: B1263, B2540
Unified Class Codes: ADG0AL, SMEAAB

898005 B7617117, C7612442
A 6-IN 20-LPI ELECTROLUMINESCENT DISPLAY PANEL
BRODY, T.P.; FANG CHEN LIO; SEPEST, Z.P.; DAVIES, D.H.
WESTINGHOUSE RES. LABS., PITTSBURGH, PA, USA
PROC. SOC. INF. DISP. (USA) VOL.16, NO.3 158-67 1975
Codon: SIDPAA

THE AUTHORS HAVE BEEN WORKING ON A SOLUTION OF THE
SOLID-STATE DISPLAY ADDRESSING PROBLEM WHICH CONSISTS OF
BUILDING THE ADDRESSING CIRCUITS (AND EVENTUALLY, ALSO
SCANNING OR DECODING CIRCUITS) DIRECTLY ON THE PANEL, AND
FULLY INTEGRATED WITH THE PARTICULAR DISPLAY MEDIUM. THE
TECHNIQUE UTILIZED FOR THIS APPROACH IS THAT OF A
VACUUM-DEPOSITED THIN FILM TRANSISTOR MATRIX. THIS PAPER
REPORTS ON THE DESIGN, CONSTRUCTION, AND PERFORMANCE OF A
1200 ELEMENT EL PANEL, SUITABLE FOR ALPHANUMERIC,
VECTOGRAPHIC, AND MONOCHROME TV IMAGE PRESENTATION. THE BASIC
CIRCUIT, REPEATED AT EVERY PICTURE ELEMENT, CONSISTS OF AN
X-Y-ADDRESSABLE LOGIC TRANSISTOR, A POWER TRANSISTOR, AND A
STORAGE CAPACITOR. THE ENTIRE CIRCUIT WAS FABRICATED THROUGH
MULTIPLE EVAPORATIONS IN A MULTISOURCE SYSTEM USING ONE
A-GRAYED EL-PHOSPHOR. AN EVAPORATED AL/PED LAYER FORMS THE
CONTINUOUS TOP ELECTRODE. THE ENTIRE DISPLAY PANEL IS FINALLY
SEALED WITH A GLASS COVER PLATE (9 Relat).

Descripton: DISPLAY SYSTEMS: ELECTROLUMINESCENCE: THIN FILM
CIRCUITS

Identifiers: ELECTROLUMINESCENT DISPLAY PANEL; DISPLAY
ADDRESSING; ADDRESSING CIRCUITS; THIN FILM TRANSISTOR MATRIX;
LOGIC TRANSISTOR; POWER TRANSISTOR; STORAGE CAPACITOR; THIN
FILM CIRCUIT

02

Section Class Codes: B2898, C9640, B2524

Unified Class Codes: SRMAAC, XNGAAY, SNCEAH

898006 B7616866, C7611906
SMALL COMPUTER AIDED DESIGN AND DOCUMENTATION OF THICK FILM
INTEGRATED CIRCUITS. II

RIPPA, G.; ALBRECHT, M.

BIE ELEKTRONIKAI TECHNIK, TAMSZEK, HUNGARY

FIZIKAI, AND MIKROTECH. (HUNGARY) VOL.14, NO.12 375-80

DEC. 1975 Codon: FRMKAY

THE PAPER SHOWS THE USE OF THE PROGRAM SYSTEM ELABORATED FOR
THE TALE CALCULATOR HP 9010 IN THE FIELD OF DOCUMENTATION.
FURTHER SOME ALGORITHMS ARE DISCUSSED. THE POSSIBILITIES OF
THE FUTURE DEVELOPMENT OF THE PROGRAM SYSTEM ARE EXAMINED

Descripton: THICK FILM CIRCUITS; COMPUTER-AIDED DESIGN
Identifiers: COMPUTER AIDED DESIGN; DOCUMENTATION; THICK
FILM INTEGRATED CIRCUITS

02

Section Class Codes: B2522, C8042

Unified Class Codes: SNCCAX, WNEEAO

897750 C7611137
AUTOMATIC DIAGNOSIS OF LOGIC FAULTS IN CERAMIC CIRCUIT PACKS

PATTON, R.L.
WESTERN ELECTRIC ENG. (USA) VOL.20, NO.1 16-19 JAN.
1976 Codon: WELAX

DISCUSSES A COMPUTER-CONTROLLED SYSTEM DEVELOPED TO
AUTOMATICALLY DIAGNOSE LOGIC FAULTS FOUND ON THIN FILM CERAMIC
CIRCUIT PACKS USED IN NO.1A, ESS AND NO.4 TOLL ESS. THE
SYSTEM CONSISTS OF A COMPUTER-CONTROLLED TEST FACILITY,
PROBING STATION, AND SOFTWARE PROGRAMS USING SCHEMATIC TRACE
ANALYSIS AND ON-LINE SIMULATION TO DETERMINE WHAT LOGIC FAULTS
ARE CONTAINED ON A FAILING CIRCUIT PACK. THE CIRCUIT PACK IS
LOGICALLY EXERCISED, AND FAILING OUTPUTS ARE LOGGED. WITH
SCHEMATIC TRACE ANALYSIS, IDENTIFICATION OF FAILING OUTPUTS
DETERMINES A SET OF GATES ON THE CIRCUIT WHICH MUST BE PROBED.
THE GATE FAILURES ARE LOGGED, THEN PRINTED UPON COMPLETION OF
THE TEST SEQUENCE. TESTING, FOR AN AVERAGE CIRCUIT PACK,
REQUIRES LESS THAN FIVE MINUTES

Descripton: LOGIC TESTING; INTEGRATED CIRCUIT TESTING;
AUTOMATIC TESTING; THIN FILM CIRCUITS; PRODUCTION TESTING;
SWITCHING SYSTEMS

Identifiers: LOGIC FAULTS; CERAMIC CIRCUIT PACKS; THIN FILM
CERAMIC CIRCUIT PACKS; PROBING STATION; SOFTWARE PROGRAMS;
SCHEMATIC TRACE ANALYSIS; LOGIC FAULTS DIAGNOSIS; AUTOMATIC
DIAGNOSIS TESTING; LOGIC TESTING; NO.1A ELECTRONIC SWITCHING
SYSTEMS; NO.4 ELECTRONIC SWITCHING SYSTEMS; ATE; COMPUTER
CONTROLLED TEST SYSTEM; ONLINE SIMULATION; LOGIC EXERCISING;
LOGIC DISCREPANCIES

02

Section Class Codes: C7896, C9420, C7862

Unified Class Codes: SNCEAH, VN2RAY, XGCAAH, ADGAAE, WMEAE,
FEGAAC

891329 B7618088
AN OSCILLOSCOPE VERTICAL-CHANNEL AMPLIFIER THAT COMBINES
MONOLITHIC, THICK-FILM HYBRID, AND DISCRETE TECHNOLOGIES

MILLARD, J.K.

HEWLETT-PACKARD, PALO ALTO, CA, USA

VOL.27, NO.4 8-11 DEC. 1975

Codon: HPJ0AX

TO MINIMIZE MAINTENANCE AND CALIBRATION TIMES BY MINIMIZING
THE NUMBER OF PARTS AND THE NUMBER OF ADJUSTMENTS, A HIGH
DEGREE OF INTEGRATION WAS INCORPORATED IN THE VERTICAL
AMPLIFIER SYSTEM OF THE MODEL 1740A OSCILLOSCOPE

Descripton: CATHODE-RAY OSCILLOSCOPES; WIDEBAND AMPLIFIERS;
THICK FILM CIRCUITS; HYBRID INTEGRATED CIRCUITS

Identifiers: MODEL 1740A OSCILLOSCOPE; VERTICAL CHANNEL
AMPLIFIER; HYBRID THICK FILM TECHNOLOGY; COMBINED IC
TECHNOLOGIES

02

Section Class Codes: B4270, B1840, B2540, B2522

Unified Class Codes: BECRAX, ETHAAB, SMEAAB, SNCCAX

B91122 B7617799
A NEW 2700-CHANNEL RADIO RELAY SYSTEM
ATADEI, G.; VICINI, P.
GTE TELECOMUNICAZIONI SPA., MILAN, ITALY
MICROWAVE SYST. NEWS (USA) VOL.5, NO.4 31, 33-4, 36-7
AUG.-SEPT. 1975 Coden: MWSHAG
UTILISING THE LATEST THIN FILM TECHNOLOGY, THIS 6.4-7.1 GHZ
RADIO TRANSCEIVER FILLS ALL CCIR REQUIREMENTS FOR HIGH
CAPACITY TELEPHONE RELAY, EQUIPMENTS, LOW POWER CONSUMPTION
AND COMPACT SIZE ARE FEATURED (1 Refs)
Descripton: MICROWAVE LINKS; RADIOTELEPHONY; TRANSCIEVERS;
THIN FILM CIRCUITS
Identifiers: RADIO RELAY SYSTEM; THIN FILM TECHNOLOGY; RADIO
TRANSCEIVER; HIGH CAPACITY TELEPHONE RELAY; POWER CONSUMPTION;
COMPACT SIZE; 6.4 TO 7.1 GHZ
02
Section Class Codes: B355, B2524
Unified Class Codes: FERMAK, SMEAH

Descripton: THICK FILM CIRCUITS; VISCOMETERS; VISCOSITY
MEASUREMENT
Identifiers: ROTATIONAL VISCOMETER; THICK FILM MATERIALS;
THICK FILM RESISTOR PASTE; GOLD CONDUCTOR PASTES; CASE STUDIES
; MATERIALS CHARACTERISATION; MEASUREMENT PRINCIPLES
02
Section Class Codes: B2522
Unified Class Codes: SMCCAX

B90564 B7616065, C7609117
THE SMALL COMPUTER TPA-1 IN THE TECHNOLOGICAL DEVELOPMENT OF
THE RADIO ENGINEERING FACTORY REMIX
AKRODZ, D.; SZAKACS, B.
FIMORTECH. AND MIMROTECH. (HUNGARY) VOL.14, NO.10 302-7
OCT. 1975 Coden: FMKAY
TECHNOLOGICAL DEVELOPMENT, WITHIN THIS THE PRODUCTION OF
INTEGRATED CIRCUITS IS ONE OF THE FIELDS OF APPLICATION FOR
SMALL COMPUTERS. BESIDE EXISTING CONFIGURATIONS, VARIOUS
PROGRAMS SUCCESSFULLY EMPLOYED IN THE FIELD OF PRODUCING
HYBRID THICK FILM INTEGRATED CIRCUITS ARE DESCRIBED IN THE
PAPER, SUCH AS PROGRAMS FOR TOPOLOGICAL DESIGN AND ARRANGEMENT
FOR DOCUMENTATION, THE FUNCTIONING OF THE PROGRAMS, THEIR
FIELDS OF APPLICATION, AND EXPERIENCE IN CONNECTION WITH THESE
TASKS ARE DISCUSSED

Descripton: INTEGRATED CIRCUIT PRODUCTION; HYBRID
INTEGRATED CIRCUITS; THICK FILM CIRCUITS; ELECTRONICS
APPLICATIONS OF COMPUTERS; MINICOMPUTERS; COMPUTER-AIDED
DESIGN
Identifiers: RADIO ENGINEERING FACTORY REMIX; TOPOLOGICAL
DESIGN; DOCUMENTATION; IC PRODUCTION; HYBRID ICS; THICK FILM
ICS; MINICOMPUTER TPA-1
02
Section Class Codes: B2522, B2540, C8B42, C9B40
Unified Class Codes: SMCCAX, SMEAAB, WMEAAQ, XREAAF
Language: HUNGARIAN

B90504 B7616005
THICK FILM ADVANCES SIMPLIFY COMPLEX HYBRID MODULE DESIGN
KIRBY, P.
ELECTRON. ENGINEERING (GB) VOL.48, NO.577 35-8 MARCH
1976 Coden: ELCEAG
THE SUPERFICIAL SIMILARITY BETWEEN TODAY'S THICK FILM HYBRID
CIRCUITS AND SOME OF THE EARLY CIRCUITS PRODUCED ABOUT FIFTEEN
YEARS AGO IS MISLEADING, BECAUSE SIGNIFICANT PROGRESS HAS BEEN
MADE IN EVERY ASPECT OF THE SUBJECT. THE AUTHOR EXPLAINS HOW
THESE IMPROVEMENTS CAN BE BROUGHT TOGETHER TO PRODUCE A NEW
RANGE OF ADVANCED HYBRID MODULES WHICH CANNOT BE REALISED BY
ANY OTHER AVAILABLE TECHNIQUE
Descripton: HYBRID INTEGRATED CIRCUITS; THICK FILM CIRCUITS
TECHNIQUES
Identifiers: COMPLEX HYBRID MODULE DESIGN; THICK FILM
02
Section Class Codes: B2540, B2522
Unified Class Codes: SMEAAB, SMCCAX

B90565 B7616067
USING A ROTATIONAL VISCOMETER TO CHARACTERIZE THICK FILM
MATERIALS. II
CHUFER, R.J.; STANLEY, E.C.
TECHNOL. AND APPLICATION, HAAME INC., SADDLE BROOK, NJ, USA
INSUL./CIRCUITS (USA) VOL.22, NO.1 23-7 JAN. 1976
Codon: ISGUDF
FOR PT.1 SEE IBID., VOL.21, NO.13, P.31-6 (1975). MEASURING
PRINCIPLES ARE ILLUSTRATED WITH CASE HISTORIES. AMONG THE
FORMULATIONS COVERED ARE: A THICK FILM RESISTOR PASTE AND
THREE GOLD CONDUCTOR PASTES. NINE CASE STUDIES ARE PRESENTED
TO ILLUSTRATE THE MANNER IN WHICH A VISCOMETER CAN HELP PASTE
SUBMITTING, AND THOSE ATTEMPTING NEW FORMULATIONS OR
AND ...

884960 B7613989, C7609577
HYBRID TECHNIQUES YIELD 4 GHZ LOGIC CIRCUITS FOR NTT'S
PROPOSED 1-2 GB/S PCM COMMS SYSTEM
JEE (JAPAN) NO.106 COMMS SYSTEM
DISCUSSES THE PCM COMMUNICATION SYSTEM AND THE NEED FOR
ULTRA HIGH-SPEED LOGIC. THE EFFECT OF PACKAGE PARASITICS, THE
CHIP TRANSISTORS, THE MANUFACTURE OF THE THIN-FILM HYBRID ICs
AND FUTURE PROBLEMS ARE CONSIDERED
Descriptors: LOGIC CIRCUITS; DIGITAL COMMUNICATION SYSTEMS;
HYBRID INTEGRATED CIRCUITS; THIN FILM CIRCUITS; DIGITAL
INTEGRATED CIRCUITS; PULSE-CODE MODULATION
Identifiers: 4 GHZ LOGIC CIRCUITS; PCM COMMUNICATION SYSTEM;
PACKAGE PARASITICS; CHIP TRANSISTORS; PCBs; MULTILAYER BOARDS;
LAMINATES; HIGH SPEED LOGIC; THIN FILM HYBRID IC; 2 GB/S PCM
COMMUNICATION SYSTEM
02

Section Class Codes: B3560, B2524, B1870, C9260, B2540
Unified Class Codes: FEKAAA, SKEAAH, EINAAP, XEGAAP, SMEAAB

883131 B7612984, C7607723
AUTOMATED LASER TRIMMING WITH LINEAR MOTOR BEAM POSITIONING
WOLFE, G.
CIRCUITS MANUF. (USA) VOL.15, NO.10 46-53 OCT. 1975
Codon: CHGAF
DESCRIBES LASER TRIMMING EQUIPMENT FOR THICK AND THIN FILM
RESISTORS AND HYBRID CIRCUIT CARDS
Descriptors: LASER BEAM
PRODUCTION; AUTOMATIC CONTROL
Identifiers: LINEAR MOTOR BEAM POSITIONING; AUTOMATED LASER
TRIMMING; THICK FILM CIRCUITS; THIN FILM CIRCUITS
02

Section Class Codes: C7882, B2520, B2980, B1267
Unified Class Codes: VMEEAE, SKEAAL, EGMAAA, ADGKAT

882942 B7613003, C7607433
UNIT: A ROTATIONAL VISCOMETER TO CHARACTERIZE THICK FILM
MATERIALS. I
OHLER, R.J.; STALEY, E.C.
TECHNOL. AND APPLICATION, HAAKE INC., SADDLE BROOK, NJ, USA
THIN FILM CIRCUITS (USA) VOL.21, NO.13 31-6 DEC. 1975
Codon: TSCUBF
DISCUSSES THE USE OF A MODERN RANGE ROTATIONAL VISCOMETER TO
OBTAIN CHARACTERISTIC FLOW CURVES ON INKS AND PASTES THAT ARE
USED IN MICROELECTRONIC CIRCUITS. IMPORTANT RHEOLOGICAL
CONCEPTS AND DEFINITIONS ARE SUMMARIZED. THE MEASURING
PRINCIPLES ARE ILLUSTRATED WITH A NUMBER OF CASE STUDIES ON
ACTUAL THICK FILM PASTES. FINALLY, CONCEPTS USEFUL TO
FORMULATORS OF THESE MATERIALS ARE DISCUSSED (10 Refs)
Descriptors: THICK FILM CIRCUITS; VISCOMETERS; RHEOLOGY;
MATERIALS TESTING
Identifiers: ROTATIONAL VISCOMETER; THICK FILM MATERIALS;
CHARACTERISTIC FLOW CURVES; INKS; PASTES; RHEOLOGICAL CONCEPTS

: THICK FILM MICROELECTRONICS; OPERATION; WIDE RANGE
VISCOMETERS; MATERIALS TESTING
02
Section Class Codes: B2522, C7624, B1268
Unified Class Codes: SKECAH, BEECAR, ZGTAAA

879766 B7613054
HYBRID TECHNOLOGY APPLIED TO THE CHIP INTERCONNECTION
PROBLEM
KIRBY, P.L.
WELBYN ELECTRIC LTD., BEDLINGTON, ENGLAND
MICROELECTRON. AND RELIAB. (GB) VOL.14, NO.4 369 1975
Codon: MCRLAS

SEMINEX '75 24-28 FEB. 1975 LONDON, ENGLAND
ABSTRACT ONLY GIVEN SUBSTANTIALLY AS FOLLOWS. REVIEWS
EXISTING TECHNIQUES AND ILLUSTRATE POSSIBLE FUTURE DEVELOPMENT
IN BOTH THIN AND THICK FILM INTERCONNECTION TECHNOLOGIES.
INTERESTING DEVELOPMENT INVOLVING THE USE OF VERY THIN COPPER
LAYERS ON P.C. BOARDS POINTS THE WAY TO HIGH DENSITY
INTERCONNECTION CIRCUITS FOR LSI CHIPS WHICH COULD ALLOW
DIRECT CHIP ATTACHMENT AND PROVIDE AN ALTERNATIVE
INTERCONNECTION SYSTEM TO THE USE OF CERMENTS ON CERAMIC
SUBSTRATES

Descriptors: THICK FILM CIRCUITS; THIN FILM CIRCUITS;
PRINTED CIRCUITS; MONOLITHIC INTEGRATED CIRCUITS; LARGE SCALE
INTEGRATION; HYBRID INTEGRATED CIRCUITS
Identifiers: CHIP INTERCONNECTION; EXISTING TECHNIQUES;
THICK FILM INTERCONNECTION TECHNOLOGIES; VERY THIN COPPER
LAYERS; HIGH DENSITY INTERCONNECTION CIRCUITS; LSI; DIRECT
CHIP ATTACHMENT; HYBRID TECHNOLOGY; THIN FILM INTERCONNECTION
TECHNOLOGY; PCBs; LSI CHIP INTERCONNECTION
06

Section Class Codes: B2540, B2528, B2230
Unified Class Codes: SKEAAB, SKEAAN, SKECAK, SENAAB

Language: FRENCH

879763 87613051
A VERSATILE TA/SUB 2/N-W-AU/SIO/SUB 2//AL/SIO/SUB 2/ THIN
FILM HYBRID MICROCIRCUIT METALLISATION SYSTEM

SAVITA LABS., ALBUQUERQUE, NM, USA
HAPPY, R.E.
IEEE TRANS., PARTS, HYBRIDS AND PACKAG. (USA) VOL. PHP-11,
NO. 4 263-72 DEC. 1975. Coden: IEPHAA
A VERSATILE THIN FILM METALLISATION TECHNIQUE IN WHICH BOTH
GOLD AND ALUMINUM CAN BE INCORPORATED ON SAPPHIRE OR FINE
GRAINED ALUMINA SUBSTRATES IN A TWO LEVEL METALLISATION SYSTEM
WITH THIN FILM RESISTORS IS DESCRIBED. THE METALLISATION
SYSTEM PERMITS EFFECTIVE INTERCONNECTION OF A MIXTURE OF
DEVICES HAVING BOTH GOLD AND ALUMINUM TERMINATIONS WITHOUT
CREATING UNDESIRABLE GOLD-ALUMINUM INTERFACES. DEVICES CAN BE
ATTACHED BY EPOXY OR SILICONE DIRECTLY ON THE CIRCUITRY.
PROCESSING TEMPERATURES UP TO 400 DEGREES C CAN BE TOLERATED.
FOR SHORT TIMES WITHOUT EFFECT ON BONDABILITY. RESISTOR,
CONDUCTOR, AND INSULATOR CHARACTERISTICS, THUS PERMITTING
SILICON-GOLD EUTECTIC DIE ATTACHMENT, COMPONENT SOLDERING, AND
HIGHER TEMPERATURES DURING LEAD BONDING. TESTS CONDUCTED ON
SPECIAL TEST PATTERN CIRCUITS INDICATE GOOD STABILITY OVER THE
TEMPERATURE RANGE -55 DEGREES C TO +150 DEGREES C. AGING STUDIES
SHOWED NO DEGRADATION IN CHARACTERISTICS IN TESTS OF 500 HOURS
DURATION AT 150 DEGREES C. (25 Refs)

Descriptors: HYBRID INTEGRATED CIRCUITS; METALLISATION; THIN
FILM CIRCUITS; INTEGRATED CIRCUIT PRODUCTION
Identifiers: TA/SUB 2/N-W-AU/SIO/SUB 2//AL/SIO/SUB 2/
HYBRID MICROCIRCUIT; VERSATILE THIN FILM METALLISATION
TECHNIQUE; COMPONENT SOLDERING; LEAD BONDING; SI-AU EUTECTIC
DIE ATTACHMENT

02
Section Class Codes: B2540, B2524
Unified Class Codes: SMEAAB, SMECAH

879761 87613049
THIN FILM HYBRID TECHNOLOGY: LOW-COST HIGH-POWER MODULES
ELECTION. AND MICROELECTION. IND. (FRANCE) NO. 212 45
15 NOV. 1975 Coden: EPCIAS
DESCRIBES THE USE OF DUPONT 9061 ALLOY (OF SILVER AND
PALLADIUM) AS A CHEAP REPLACEMENT FOR GOLD AND PLATINUM AS
MATERIALS FOR USE IN THIN FILM CIRCUIT BOARD MANUFACTURE. THE
NEW ALLOY WITH 96PERCENT ALUMINUM TRACKS CAN BE PROCESSED IN
AIR AT 760C (INSTEAD OF IN CONTROLLED ATMOSPHERES AT 1600C)
AND HAS PROVED SATISFACTORY IN POWER REGULATING MODULES
CONTROLLING UP TO 3.75 KW

Descriptors: HYBRID INTEGRATED CIRCUITS; THIN FILM CIRCUITS
; SILVER ALLOYS; PALLADIUM ALLOYS; MODULES
Identifiers: DUPONT 9061 ALLOY; POWER REGULATING MODULES;
HYBRID CIRCUITS; PROCESSING IN AIR; LOW COST MODULES; HIGH
POWER MODULES; AG-PD ALLOY; AU-PD REPLACEMENT; 96PERCENT AL
TRACKS; THIN FILM CIRCUITS; PCB MANUFACTURE

02
Section Class Codes: B2540, B2522, B1266, B1830
Unified Class Codes: SMEAAB, SMECAH, ADGHAM, ETCGAT

879760 87613048
CHOOSING THICK FILM HYBRID MICROELECTRONICS
SIMONS, A.
STG-CANNON COMPONENTS PTY LTD., LIVERPOOL, ENGLAND
AUST. ELECTRON. ENG. (AUSTRALIA) VOL. B, NO. 5 10-24 MAY
1975 Coden: AUEEDS
DISCUSSES THE ADVANTAGES, THE TECHNOLOGY AND APPLICATIONS OF
THICK-FILM CIRCUITS. A SUMMARY OF THICK-FILM COMPONENT
PARAMETERS IS GIVEN. THE ADVANTAGES OF GREATER RELIABILITY,
SMALL SIZE, AND LOWER INITIAL DEVELOPMENT COSTS OVER DISCRETE
COMPONENT DESIGN ARE SHOWN.

Descriptors: THICK FILM CIRCUITS; HYBRID INTEGRATED CIRCUITS
; INTEGRATED CIRCUIT PRODUCTION; RELIABILITY; ECONOMICS
Identifiers: HYBRID MICROELECTRONICS; COMPONENT PARAMETERS;
RELIABILITY; SIZE; COSTS; THICK FILM CIRCUITS; THICK FILM
TECHNOLOGY; INTEGRATED CIRCUIT PRODUCTION

02
Section Class Codes: B2540, B2522, B1263
Unified Class Codes: SMEAAB, SMECAH, ADGDAL

879742 87613006
MATERIAL CHARACTERISATION OF TI-CU-NI-AU (TCNA)-A NEW LOW
COST THIN FILM CONDUCTOR SYSTEM

MORABITO, J.M.; THOMAS, J.H.; LESH, N.G.
BELL LABS., ALLENSTOWN, PA, USA
IEEE TRANS., PARTS, HYBRIDS AND PACKAG. (USA) VOL. PHP-11,
NO. 4 253-62 DEC. 197571 Coden: IEPHAA

THE CONTINUED INCREASE IN THE COST OF PRECIOUS METALS SUCH
AS PALLADIUM AND GOLD HAS STIMULATED INCREASED INTEREST IN THE
DEVELOPMENT OF LOWER COST, BUT EQUALLY RELIABLE, SUBSTITUTES
FOR NOBLE METAL THIN FILM CONDUCTOR SYSTEMS SUCH AS TI-PD-AU.
THIS PAPER DISCUSSES A TI-CU-NI-AU (TCNA) SUBSTITUTE WHICH
ELIMINATES THE USE OF PD AND REDUCES THE THICKNESS OF GOLD
NECESSARY FOR A .005 OUNCE PER SQUARE SHEET RESISTANCE FROM 5
NUM TO .2 NUM. THE REDUCTION IN GOLD THICKNESS CAN RESULT IN
CONSIDERABLE COST SAVINGS. THE TCNA FILMS WERE DEPOSITED BY
PLATING OF CU-NI-AU (28 Refs)

Descriptors: CONDUCTORS (ELECTRIC); THIN FILM CIRCUITS;
INTEGRATED CIRCUIT PRODUCTION
Identifiers: TI-CU-NI-AU (TCNA); THIN FILM CONDUCTOR SYSTEM;
PLATING; ELECTRON GUN EVAPORATION

02
Section Class Codes: B2524, B2540
Unified Class Codes: SMECAH, SMEAAB

DIALOG File13: INSPEC-ELEC & COMPUT 69-77/ISS17 (COPR. I.E.E.) (Item 187 of 388) User 674 28oct77

ATMOSPHERE: PROCESSING AT 850 TO 900 DEGREES C

02
Section Class Codes: B2522, B2210
Unified Class Codes: SMCCAX, SEEAAS
Language: FRENCH

879740 B7613004
CHEMICAL ANALYSES OF THICK-FILM GOLD CONDUCTOR INKS
HITCH, T.T.; WHITAKER, H.H.; BOTNICK, E.M.; GOYDISH, B.L.
PLA DAVID SARNOFF RES. CENTER, PRINCETON, NJ, USA
IEEE TRANS. PARTS, HYBRIDS AND PACKAG. (USA) VOL. PHP-11,
NO. 4 248-53 DEC. 1975 Coden: IEPHAA
THE INORGANIC CONSTITUENTS OF SEVENTEEN COMMERCIAL
GOLD-BASED CONDUCTOR INKS HAVE BEEN CHEMICALLY ANALYSED IN
DETAIL. A VARIETY OF TECHNIQUES WERE EMPLOYED INCLUDING A
PRELIMINARY ANALYSIS OF THE INK SAMPLES IN OXYGEN, WHICH BURNED OFF THE
ORGANIC VEHICLES, FOLLOWED BY WET CHEMICAL ANALYSIS TO
DETERMINE THE PROPORTION OF GOLD IN THE INORGANIC SOLIDS OF
THE INKS. SOLID MASS SPECTROMETRY AND OPTICAL EMISSION
SPECTROMETRY WERE USED TO DEFINE THE RELATIVE AMOUNTS OF OTHER
ELEMENTS PRESENT. ATOMIC ABSORPTION SPECTROMETRY WAS THEN
EMPLOYED, WHERE APPLICABLE, TO MORE PRECISELY DEFINE THE
PROPORTIONS OF IMPORTANT BINDER CONSTITUENTS IN THE INKS. THE
PAPER BRIEFLY DESCRIBES EACH OF THE ANALYTICAL METHODS USED
AND REFERS TO MORE DETAILED DESCRIPTIONS OF EACH METHOD.
DESCRIPTIONS ARE GIVEN OF INNOVATIVE LABORATORY TECHNIQUES
USED TO PERFORM THE STUDY AND WITH THE OTHER MATERIAL GIVEN
AND REFERENCED SHOULD ENABLE THE READER TO DUPLICATE THE
ANALYSES (17 Refs)
D-SCRIPTORS: THICK FILM CIRCUITS; CHEMICAL ANALYSIS;
CONDUCTORS (ELECTRIC)
Identifiers: PRECURSOR BAKE; WET CHEMICAL ANALYSIS; OPTICAL
EMISSION SPECTROMETRY; THICK FILM AU CONDUCTOR INKS; CHEMICAL
ANALYSIS; SOLID MASS SPECTROMETRY; ATOMIC ABSORPTION
SPECTROMETRY
02
Section Class Codes: B2522
Unified Class Codes: SMCCAX

879737 B7613000
PHOTO-CHEMICAL METHODS FOR IC MANUFACTURING
LUPINSKI, W.
ELEKTRONIKA (POLAND) VOL. 16, NO. 11 451-5 1975 Coden:
EKNIDZ
THE PAPER PRESENTS NEW ACHIEVEMENTS IN THE FIELD OF
PHOTO-CHEMICAL METHODS AS APPLIED FOR THE TECHNOLOGY OF
INTEGRATED CIRCUITS, THICK- AND THIN-FILM CIRCUITRY AND SHAPE
ETCHING, AND TO PRINTED CIRCUITS (17 Refs)
D-SCRIPTORS: INTEGRATED CIRCUIT PRODUCTION; THIN FILM
CIRCUITS; THICK FILM CIRCUITS; PHOTOLITHOGRAPHY; MONOLITHIC
INTEGRATED CIRCUITS; ETCHING; PRINTED CIRCUITS
Identifiers: ETCHING; IC MANUFACTURE; PHOTO-CHEMICAL
PROCESSING; THICK FILM CIRCUITS; THIN FILM CIRCUITS
02
Section Class Codes: B2522, B2236, B2528, B2524
Unified Class Codes: SMCCAX, SEMAAX, SMCKAK, SMCEAH
Language: POLISH

879738 B7613001
NIN-PRECIOUS METALS FOR REPLACING GOLD IN THICK FILM INKS
IMOF, M.; KERSUZAN, M.
ELECTRON. AND MICROELECTRON. IND. (FRANCE) NO. 212 46-7
15 NOV 1975 Coden: EPCIAS
DI-CRINES THE CERMALLOY SYSTEM OF THICK FILM CIRCUIT
MANUFACTURE USING COPPER OR NICKEL BEARING INKS WITH GLASS
SEALING MATERIAL AND DIELECTRICS ALL PROCESSED AT BETWEEN 850
AND 900C IN A NITROGEN ATMOSPHERE. THE PARTIAL PRESSURE OF
OXYGEN IS HELD TO LESS THAN 4 PPM. USING THESE TECHNIQUES THE
USE OF GOLD AND OTHER PRECIOUS METALS CAN BE AVOIDED. THE
CONDUCTORS ADHERE WELL TO NEARLY ALL COMMONLY USED SUBSTRATES,
AND RESISTANCES WITH TEMPERATURE COEFFICIENTS OF LESS THAN 150
PPM/C FOR VALUES OF BETWEEN 50 AND 3000 OHM/SQUARE CAN BE LAID
DOWN. IT IS ANTICIPATED THAT THESE CHEAP MATERIALS WILL AID
THE EXPANSION OF THICK-FILM TECHNIQUES
D-SCRIPTORS: THICK FILM CIRCUITS; THICK FILM RESISTORS
Identifiers: THICK FILM INKS; CERMALLOY SYSTEM; THICK FILM
CIRCUIT MANUFACTURE; GLASS SEALING MATERIAL; THICK FILM
INKS

879734 B7612997
THE DETECTION AND ANALYSIS OF THERMALLY INDUCED
DISPLACEMENTS IN POWERED MICROELECTRONIC CIRCUITS UTILIZING
HOLOGRAPHIC INTERFEROMETRY
MAYES, E.S.; FRIEDRICH, D.W., JR.; DOUGAL, A.A.
Report No.: TR-167AFSOR-TR-75-1061; Issued by: UNIV.
TEXAS, AUSTIN, USA;
MARCH 1975

A METHOD OF PRODUCING HOLOGRAMS OF MICROSCOPIC SUBJECTS WAS
DEVELOPED IN WHICH A MAGNIFYING LENS SYSTEM WAS INTRODUCED
INTO THE RECORDING PHASE. GOOD QUALITY HOLOGRAMS WERE REALIZED
OF THREE BASIC TYPES OF ELECTRONIC CIRCUITS, NAMELY: AN
INTEGRATED CIRCUIT, A HYBRID MICROCIRCUIT, AND A DISCRETE
CONVENTIONAL CIRCUIT. DOUBLE EXPOSURE HOLOGRAMS WERE THEN
RECORDED OF EACH CIRCUIT. THE VARIOUS MODES OF EXPANSION FOR
EACH CIRCUIT WERE EXPLAINED BY RELATING THE OBSERVED FRINGE
PATTERNS TO THE CIRCUIT GEOMETRIES AND THE THERMAL HEATING
CONDITIONS IMPOSED

Descriptores: HOLOGRAPHIC INTERFEROMETRY; INTEGRATED CIRCUIT
TESTING
Identifiers: THERMALLY INDUCED DISPLACEMENTS; POWERED
MICROELECTRONIC CIRCUITS; HOLOGRAPHIC INTERFEROMETRY;
HOLOGRAMS; MAGNIFYING LENS SYSTEM; ELECTRONIC CIRCUITS;
INTEGRATED CIRCUIT; HYBRID MICROCIRCUIT; DISCRETE COMPONENT
CIRCUIT

11
Section Class Codes: B2520, B2540, B1269
Unified Class Codes: SMCAAL, SMEAAB, ADMMAE
Availability: NIST, SPRINGFIELD, VA, 22161, USA

879732 B7612537
TEMPERATURE STABILITY OF THE Q-FACTOR OF AN ACTIVE BANDPASS
RC FILTER WITH A NULLING CIRCUIT IN THE FEEDBACK LOOP
BURENSHTEIN, B.SH.; VOROB'EV, A.M.
IZV. VUZ RADIOELEKTRON. (USSR) VOL.18, NO.8 59-63 AUG.
1975 Codon: IVUZ05

AN EXPRESSION IS DERIVED FOR THE INSTABILITY OF THE Q-FACTOR
OF AN ACTIVE RC FILTER, RESULTING FROM CHANGES OF DIELECTRIC
LOSSES WITH CAPACITORS OF THE FILTER. A FORMULA IS ALSO
OBTAINED FOR THE DESIGN OF FILTERS WITH A STABLE Q-FACTOR.
THESE FORMULAE ARE VERIFIED EXPERIMENTALLY. USING A
DISTRIBUTED RC FILTER, WITH A TA-TA/SUB 2/0/SUB 5/-AL
STRUCTURE, AT A NULLING FREQUENCY OF 3200 HZ, GOOD AGREEMENT
EXISTS BETWEEN THE TWO SETS OF RESULTS. (3 Refs)
Descriptores: ACTIVE FILTERS; BAND-PASS FILTERS; THIN FILM
CIRCUITS; Q-FACTOR; DISTRIBUTED PARAMETER NETWORKS
Identifiers: O-FACTOR; ACTIVE BANDPASS RC FILTER; NULLING
CIRCUIT; FEEDBACK LOOP; DIELECTRIC LOSSES; TEMPERATURE
STABILITY

02
Section Class Codes: B1880, B2524, B1650
Unified Class Codes: ETRAAM, SMECAH, ERMAAH
Language: RUSSIAN

879281 B7612461
A HIGH SPEED, HIGH RESOLUTION CLOCKED COMPARATOR
VAGLIANI, F.; SESTANI, F.; ANTIGNETTI, P.; BERTORA, F.
INST. OF ELECTRONICS, GENOVA, ITALY
ALTA FREQ. (ITALY) VOL.44, NO.11 679-80 NOV. 1975
Codon: ALFRAJ

THE HYBRID THIN-FILM CLOCKED COMPARATOR DESCRIBED HAS BEEN
DESIGNED FOR USE IN A PCM ENCODER. SUCH DESIGN TAKES ADVANTAGE
OF THE FUNCTIONAL INTEGRATION BETWEEN THE DIFFERENTIAL
COMPARATOR AND THE DISTABLE; IT EXPLOITS THE POSITIVE FEEDBACK
OF THE FLIP-FLOP AS AN ESSENTIAL MEANS FOR ACHIEVING HIGH
SPEED AND SENSITIVITY, THUS ALLOWING THE REDUCTION OF
COMPLEXITY AND POWER CONSUMPTION (12 Refs)
Descriptores: COMPARATORS (CIRCUITS); THIN FILM CIRCUITS;
HYBRID INTEGRATED CIRCUITS; DIGITAL-ANALOGUE CONVERSION
Identifiers: HIGH SPEED, HIGH RESOLUTION CLOCKED COMPARATOR;
PCM ENCODER; HYBRID THIN FILM IC

02
Section Class Codes: B1870, B1890, B2524, B2540
Unified Class Codes: ETNAAP, ETAAAC, SMECAH, SMEAAB

879276 B7612455
IMPROVED FREQUENCY RESPONSE FOR M/W DETECTOR
MICHAEL
THIS FAMILY OF MICROWAVE DETECTORS, USING LOW BARRIER/HOT
CARRIER DIODE (LBHCD) TECHNOLOGY, HAS IMPROVED FREQUENCY
RESPONSE AND IMPEDANCE MATCH COMPARED WITH EARLIER
POINT-CONTACT TECHNOLOGY

Descriptores: MICROWAVE DETECTORS; SCHOTTKY-BARRIER DIODES;
THIN FILM CIRCUITS
Identifiers: MICROWAVE DETECTOR; LOW BARRIER HOT CARRIER
DIODE; IMPROVED FREQUENCY RESPONSE; IMPROVED IMPEDANCE MATCH;
THIN FILM CIRCUIT TECHNOLOGY

02
Section Class Codes: B1860, B2460, B2524
Unified Class Codes: ETMAAG, SKMAAF, SMECAH

871529 B7609040, C7606195
INPUT/OUTPUT TECHNIQUES FOR COMPUTERIZED HYBRID-MICROCIRCUIT
MASKING

SHEETS, L.R.
ELECTRONICS ENGRG. DEPT., BENDIX CORP., KANSAS CITY, MO, USA
MICROELECTRONICS (GB) VOL.5, NO.3, 50-6 1974 Coden:

THIS PAPER DESCRIBES CERTAIN INPUT/OUTPUT TECHNIQUES THAT
HAVE BEEN DEVELOPED TO SIMPLIFY THE COMPUTERIZED FABRICATION
OF PHOTOMASKS FOR THIN-FILM HYBRID MICROCIRCUITS. THESE
TECHNIQUES MINIMIZE THE AMOUNTS OF DATA THAT ARE REQUIRED FOR
SPECIFYING A PHOTOMASK AND EXPEDITE THE PREPARATION OF ARTWORK
FOR SUCH MASKS. SPECIAL PROGRAM SUBROUTINES MAKE THE SYSTEM
SUITABLE FOR USE WITH EITHER OF TWO GRAPHIC-OUTPUT DEVICES,
THE GERBER PLOTTER AND THE CALCOMP 710 PLOTTER. AN
INTERACTIVE-GRAPHICS INPUT IS CURRENTLY UNDER STUDY. (3 Refs)
Descriptors: HYBRID INTEGRATED CIRCUITS; THIN FILM CIRCUITS;
MASKS; ELECTRONICS APPLICATIONS OF COMPUTERS

Identifiers: PHOTOMASKS; ARTWORK; COMPUTER AIDED FABRICATION
; THIN FILM HYBRID CIRCUITS; GRAPHIC OUTPUT DEVICES

02
Section Class Codes: B2540, B2524, C8842
Unified Class Codes: SMEAAB, SMCEAH, WNEEAQ

871512 B7609084, C7606178
SMALL COMPUTER AIDED DESIGN AND DOCUMENTATION OF THICK FILM
INTEGRATED CIRCUITS. I

PIPKA, G.; ALBRECHT, M.
BIE ELEKTRONIKAI TECHNOLOGIA TANSZEK, BUDAPEST, HUNGARY
FIZIKUSCH. AND MIKROTECH. (HUNGARY) VOL.14, NO.9 269-74
SEPT 1975 Coden: ENKWAY

PRESENTS A PROGRAM SYSTEM ELABORATED FOR A TABLE CALCULATOR
TYPE HP 9810, FACILITATING THE DESIGN AND DOCUMENTATION OF
THICK FILM INTEGRATED CIRCUITS. THE FIRST PART SHOWS THE USE
OF THE PROGRAM SYSTEM AT DESIGNING. THE DESIGNER RECEIVES A
GRAPHIC DISPLAY OF THE DESIGNED RESISTORS. FURTHER OF THE
HYBRID ELEMENTS AND THE SUBSTRATE, THESE CAN BE USED AS
AUXILIARY DATA AT DESIGNING THE TOPOLOGY
Descriptors: COMPUTER-AIDED DESIGN; TOPOLOGY; ELECTRONICS
APPLICATIONS OF COMPUTERS; THICK FILM CIRCUITS
Identifiers: COMPUTER AIDED DESIGN; DOCUMENTATION; THICK
FILM INTEGRATED CIRCUITS; TABLE CALCULATOR TYPE HP 9810;
GRAPHIC DISPLAY; LAYOUT DESIGN

02
Section Class Codes: B2522, C8842
Unified Class Codes: SMCCAX, WNEEAQ
Language: HUNGARIAN

870760 B7608347, C7605411
A PHASE CONTINUOUS PROGRAMMABLE OSCILLATOR
MORAN, P.L.
DEPT. OF ELECTRONIC AND ELECTRICAL ENGRG., LOUGHBOROUGH

UNIV. OF TECHNOL., LOUGHBOROUGH, ENGLAND

MICROELECTRONICS (GB) VOL.7, NO.1 40-4 SEPT. 1975
Coden: MICB99

A NUMBER OF VOLTAGE CONTROLLED OSCILLATORS USE NON-LINEARITY
TO CONVERT FIXED AMPLITUDE TRIANGULAR WAVES TO 'SINE' WAVES.
SINCE THIS CONVERSION IS A FUNCTION OF AMPLITUDE ONLY (TO A
FIRST APPROXIMATION) THE SINE WAVE FREQUENCY MAY BE ALTERED
AT WILL BY CHANGING THE FREQUENCY OF THE TRIANGULAR WAVE. THE
SUBJECT OF THIS PAPER IS AN ALTERNATIVE METHOD OF PRODUCING
SINE WAVES. THE FREQUENCY MAY BE PROGRAMMED EITHER DIGITALLY
OR IN AN ANALOGUE MANNER AND IT MAY BE CHANGED WITHIN A SMALL
FRACTION OF A CYCLE. USING THIS TECHNIQUE IT IS POSSIBLE TO
GENERATE MULTIPLE OUTPUTS, EACH OF A DIFFERENT PHASE. OF
PARTICULAR INTEREST TO COMMUNICATIONS ENGINEERS IS THE ABILITY
TO PRODUCE PHASE QUADRATURE SIGNALS. THE TECHNIQUE REQUIRES A
RELATIVELY LARGE NUMBER OF RESISTORS, ALL HAVING A PRECISE
RELATIONSHIP. IT IS, THEREFORE, PARTICULARLY SUITABLE FOR
CONSTRUCTION USING THICK FILM TECHNIQUES

Descriptors: OSCILLATORS; FREQUENCY CONTROL; PROGRAMMED
CONTROL; THICK FILM CIRCUITS
Identifiers: PHASE CONTINUOUS PROGRAMMABLE OSCILLATOR;
MULTIPLE OUTPUTS; PHASE QUADRATURE SIGNALS; THICK FILM
TECHNIQUES

02
Section Class Codes: B1850, B2522, C7424
Unified Class Codes: ETKAAR, SMCCAX, VCCXAD

869294 B7610380
ACTIVE TONE CONTROL IN TANTALUM THIN FILM TECHNOLOGY

BOSSELMANN, W.
SIEMENS AG, BEBEICH BAUELEMENTE, GRUNDLAGENENTWICKLUNG,
MUNICH, GERMANY
ELEKTRON INT. (AUSTRIA) NO.10 350-3 1975 Coden:
EKITAG

IN SIMPLE L.F. AMPLIFIERS, THE HIGH AND LOW PASS TONE
CONTROL SECTIONS ARE NOT ADEQUATELY DECOUPLED, AND THE
MID-FREQUENCY RANGE IS AFFECTED BY BOTH POTENTIOMETERS. A
SYNTHESIS PROCESS PERMITS THE DESIGN OF AN ACTIVE BANDPASS
FILTER IN WHICH THE MID-FREQUENCY IS CONSTANTLY VARIABLE WITH
NO ALTERATION IN THE BANDWIDTH, USING TWO FOUR-POLES, TAA 765
AND TAA 221 OP AMPS. IN A TANTALUM THIN FILM CIRCUIT, THE
SPECIFICATION ATTAINABLE IS: 30 HZ TO 20 KHZ; CONTINUOUSLY
VARIABLE 2 TO 6 KHZ; MAX RISE/FALL +OR- 10 DB; 1/P 10 V EFF;
1/P 2>10K; 0/P 2<1K (1 Refs)

Descriptors: THIN FILM CIRCUITS; ACTIVE FILTERS; BAND-PASS
FILTERS; OPERATIONAL AMPLIFIERS; TANTALUM
Identifiers: ACTIVE TONE CONTROL; ACTIVE BAND PASS FILTER;
OPERATIONAL AMPLIFIERS; CONSTANTLY VARIABLE MID FREQUENCY; TA
THIN FILM TECHNOLOGY

02
Section Class Codes: B3780, B1840, B2524, B1880
Unified Class Codes: FKRAAF, ETHAAB, SMCEAH, ETRAAM
Language: GERMAN

869109 B7610279
NEW BLACK-AND-WHITE MODULAR CHASSIS
RIECHMANN, W.
FURKSHAU, (GERMANY) VOL. 47, NO. 22 109-11 24 OCT. 1975
Codon: FUSHA2
DESCRIBES BLAUPUNKT'S SW MONOCHROME CHASSIS (FOR TV
RECEIVERS) ON WHICH ALL COMPONENTS EXCEPT THE POWER SUPPLY AND
HORIZONTAL DEFLECTION CIRCUITRY (WITH H.V. COMPONENTS) ARE
MOUNTED AS SEPARATE MODULES CONSTRUCTED EITHER AS THICK FILM
CIRCUITS OR AS ICs. BRIEFLY DESCRIBED IN TERMS OF MECHANICAL
CONSTRUCTION AND ELECTRONIC CIRCUITRY ARE THE HORIZONTAL
OUTPUT STAGE AND H.V. RECTIFIER (NON-MODULAR), AND THE
VERTICAL DEFLECTION MODULE.
Descriptores: TELEVISION RECEIVERS; THICK FILM CIRCUITS;
RECTIFYING CIRCUITS; MODULES
Identifiers: MODULAR CHASSIS; MONOCHROME CHASSIS; TV
RECEIVERS; THICK FILM CIRCUITS; MECHANICAL CONSTRUCTION;
ELECTRONIC CIRCUITRY; HORIZONTAL OUTPUT STAGE; VERTICAL
DEFLECTION MODULE; HV RECTIFIER
02
Section Class Codes: B3740, B1266, B2522, B1830
Unified Class Codes: FKGAAM, ADGHAM, SMCACX, ETGAAT
Language: GERMAN

INTEGRATED CIRCUITS: LASER BEAM MACHINING; SUBSTRATES:
CERAMICS
Identifiers: LASER BEAM MACHINING; CERAMIC SUBSTRATES;
HYBRID MICROCIRCUITS; PRODUCTION MACHINING
02
Section Class Codes: B2980, B2540, B2610, B1269
Unified Class Codes: EGMAAA, SMEAAB, SNCAAY, ADGMAE

869164 B7600036
SOLDERING HYBRID MICROCIRCUITS WITH PASTE SOLDER
BERNIER, D.
RES. AND DEV., WESTER SOLDER DIV., LITTON SYSTEMS, CHICAGO,
IL, USA
INSUL./CIRCUITS (USA) VOL. 21, NO. 12 27-8 NOV. 1975
Codon: ISCUOP
Descriptores: HYBRID INTEGRATED CIRCUITS; INTEGRATED CIRCUIT
PRODUCTION; SOLDERING
Identifiers: HYBRID MICROCIRCUITS; PASTE SOLDER
02
Section Class Codes: B2540
Unified Class Codes: SMEAAB

869003 B7610046
'A THICK FILM ELECTRONIC HYBRID COIL'
JACKSON, L.N.
ROYAL MELBOURNE INST. OF TECHNOL., MELBOURNE, VICTORIA,
AUSTRALIA
PHOC. INST. RADIO AND ELECTRON. ENG. AUST. (AUSTRALIA)
VOL. 16, NO. 5 117-18 MAY 1975 Codon: PRAUAG
A CIRCUIT IS DESCRIBED WHICH CAN REPLACE THE CONVENTIONAL
HYBRID COIL AS A TWO WIRE/FOUR WIRE CONVERTOR IN COMMUNICATION
CIRCUITS. THE CIRCUIT HAS BEEN REALISED AS A THICK FILM
MICROCIRCUIT (2 Refs)
Descriptores: TELEPHONE STATION EQUIPMENT; CONVERTORS; THICK
FILM CIRCUITS
Identifiers: ELECTRONIC HYBRID COIL; TWO WIRE/FOUR WIRE
CONVERTOR; THICK FILM MICROCIRCUIT
02
Section Class Codes: B3532, B2522
Unified Class Codes: FECCAY, SMCACX

868162 B7609034
REWORK TECHNIQUE REMOVES BEAM-LEAD DEVICES INTACT FOR
POST-MORTEM TESTS
YOUNGBERG, D.A.; LENHARDT, B.W.
BENDIX CORP., KANSAS CITY, MO, USA
INSUL./CIRCUITS (USA) VOL. 21, NO. 12 21-2 NOV. 1975
Codon: ISCUOP
THE PHOTOGRAPHIC REMOVING TECHNIQUE IS USED TO ATTACH
BEAM-LEAD DEVICES (BLD) TO SUBSTRATES DURING ASSEMBLY OF
HYBRID MICROCIRCUITS (HMC). SEVERAL REASONS MAY DICTATE THE
NEED TO REMOVE AND REPLACE ONE OR MORE OF THESE BLD. A
SCRAPE-OFF TECHNIQUE GENERALLY USED THROUGHOUT INDUSTRY CAN
SELDOM REMOVE THE BLD INTACT AND UN Damaged. HOWEVER, A
TECHNIQUE HAS BEEN DEVELOPED THAT CAN BE USED TO REMOVE BLDs
FROM A HYBRID AND MAINTAIN DEVICE INTEGRITY FOR POST-MORTEM
TESTS. THE TECHNIQUE DOES NOT DAMAGE SUBSTRATE METALLIZATION
OR THE HYBRID CIRCUIT
Descriptores: HYBRID INTEGRATED CIRCUITS; BEAM-LEAD DEVICES
Identifiers: HYBRID MICROCIRCUITS; THERMOCOMPRESSOR BONDING
; POST MORTEM TESTING; BEAM LEAD DEVICES; REWORK TECHNIQUE
02
Section Class Codes: B2540
Unified Class Codes: SMEAAB

868604 B7609560
CERAMIC SUBSTRATES LASER MACHINED: A VITAL PRODUCT
NOLINER, J.
ELECTRON. AND MICROELECTRON. IND. (FRANCE) NO. 209 39-43
1 OCT. 1975 Codon: EMC1AS
DISCUSSES PRODUCTION LASER BEAM MACHINING OF CERAMIC
SUBSTRATES FOR HYBRID MICROCIRCUITS. SEVERAL EXAMPLES ARE
GIVEN
Descriptores: INTEGRATED CIRCUIT PRODUCTION; HYBRID

B68161 B7609033
HYBRID CIRCUITS PROVIDE DESIGN FLEXIBILITY
PEIRCE, C.
GENERAL INSTRUMENT LTD., LONDON, ENGLAND

ELECTRON (GB) NO.84 15, 27 6 NOV. 1975 Coden: ELINCL
IN THE MANUFACTURE OF HYBRID CIRCUITS A CONDUCTOR PATTERN IS
FIRING ONTO A CERAMIC SUBSTRATE. CERMET RESISTORS ARE THEN
SCREENED AND FIRED AND OTHER COMPONENTS SUCH AS CAPACITOR
CHIPS AND SEMICONDUCTORS ARE APPLIED BY CONVENTIONAL ASSEMBLY
TECHNIQUES. THE MAJOR EMPHASIS IN THE PAST HAS BEEN ON HYBRIDS
FOR MILITARY APPLICATIONS, BUT COST REDUCTIONS HAVE BEEN SO
FAST

DESCRIPTIONS: HYBRID INTEGRATED CIRCUITS; INTEGRATED CIRCUIT
PRODUCTION; CERMET; THICK FILM CIRCUITS
IDENTIFIERS: DESIGN FLEXIBILITY; HYBRID CIRCUITS; CONDUCTOR
PATTERN; CERAMIC SUBSTRATE; CAPACITOR CHIPS; SEMICONDUCTORS;
ASSEMBLY TECHNIQUES; COST REDUCTIONS; CERMET RESISTORS

02
Section Class Codes: B2540, B2522
Unified Class Codes: SMEAAB, SMCCAX

B68160 B7609032
REALISE YOUR RC FILTERS IN HYBRID THIN FILM TECHNOLOGY
DUPONT, M.
ELECTRON, AND MICROELECTRON, IND. (FRANCE) NO.210 47-50

15 OCT. 1975 Coden: EMCIAS
THE PROPERTIES OF ACTIVE RC FILTERS AND THEIR REALISATION
USING OPERATIONAL AMPLIFIERS IS OUTLINED FOR QUALITY FACTORS
ABOVE AND BELOW 10, USING TANTALUM FILMS (5 refs)

DESCRIPTIONS: ACTIVE FILTERS; OPERATIONAL AMPLIFIERS; HYBRID
INTEGRATED CIRCUITS; THIN FILM CIRCUITS
IDENTIFIERS: HYBRID THIN FILM;
OPERATIONAL AMPLIFIERS; TANTALUM FILMS

02
Section Class Codes: B2540, B2524, B1880
Unified Class Codes: SMEAAB, SMCEAH, ETRAAM
Language: FRENCH

B68156 B7609028
BOND CHIPS WITH CONDUCTIVE EPOXIES
HITHERINGTON, D.R.
NEWARKET TRANSISTORS, LTD., NEWARKET, ENGLAND

ELECTRON, DES. (USA) VOL.23, NO.20 82-5 27 SEPT. 1975
Codin: ELUDAW
THEIR LOW CURING TEMPERATURES AVOID DAMAGE TO DELICATE
PARTS, WHILE THE ASSEMBLY PROCESS IS INEXPENSIVE AND EASILY
AUTOMATED

DESCRIPTIONS: INTEGRATED CIRCUIT PRODUCTION; SUBSTRATES;
HYBRID INTEGRATED CIRCUITS
IDENTIFIERS: EPOXIES; HYBRID MICROCIRCUITS; PNEUMATIC
DISPENSING; SCREEN PRINTING; CURE TIME; BOND STRENGTH

02
Section Class Codes: B2540, B2560
Unified Class Codes: SMEAAB, SMGAAR

B68155 B7609027
GOLD IN HYBRID MICRO-ELECTRONICS
ELEKTRONIK (GERMANY) VOL.24, NO.11 103-5 NOV. 1975
Codin: EKGAAR

GOLD IS INCREASINGLY APPLIED IN THIN-FILM AND THICK-FILM
HYBRID CIRCUITS: IT DOES NOT TARNISH OR CORRODE, IS A GOOD
CONDUCTOR AND CAN BE EASILY WORKED AND DEPOSITED. IN THIN-FILM
TECHNIQUE THE CRAU CONDUCTOR IS NOW FIRMLY ESTABLISHED.
PRODUCTION METHODS LIKE MICRO-ENGRAVING, VACUUM DEPOSITING AND
SUBLIMATION, AND FINE-ADJUSTMENT METHODS BY SPARK EROSION AND
LASER BEAMS ARE BRIEFLY DESCRIBED. FOR THICK-FILMS GOLD IS
MOSTLY ALLOYED WITH PALLADIUM AND PLATINUM. TYPICAL CIRCUIT
DESIGNS ARE ILLUSTRATED IN FIVE PHOTOGRAPHS

DESCRIPTIONS: HYBRID INTEGRATED CIRCUITS; THIN FILM CIRCUITS;
THICK FILM CIRCUITS; GOLD ALLOYS; VAPOUR DEPOSITION;
INTEGRATED CIRCUIT PRODUCTION
IDENTIFIERS: CRAU CONDUCTOR; SUBLIMATION; HYBRID ICS; VACUUM
DEPOSITION; THIN FILM CIRCUITS; MICROENGRAVING; THICK FILM
CIRCUITS; AU APPLICATIONS; TRIMMING; PRODUCTION METHODS; AU-PT
ALLOYS; METALLIC THIN FILMS; AU-PD ALLOYS; AU

02
Section Class Codes: B2540, B2522, B2524
Unified Class Codes: SMEAAB, SMCCAX, SMCEAH
Language: GERMAN

B68135 B7608003
FILM DISTRIBUTED NETWORKS: A REVIEW
HOSE, N.M.
DEPT. OF ELECTRICAL ENGRG. AND COMPUTER SCI., UNIV. OF

CALIFORNIA, BERKELEY, CA, USA
MICROELECTRONICS (GB) VOL.5, NO.3 30-6 1974 Coden:
MICE99

SUMMARIZES BRIEFLY THE AVAILABLE ANALYSIS AND SYNTHESIS
TECHNIQUES THAT ARE APPLICABLE TO FILM DISTRIBUTED AND
LUMPED-DISTRIBUTED NETWORKS. SPECIAL ATTENTION IS GIVEN TO THE
LAYOUT PROBLEM AND THE FACTORS TO BE TAKEN INTO ACCOUNT AND
THE TOOLS TO BE USED IN AN OVERALL LAYOUT OPTIMIZATION PROBLEM
(41 refs)

DESCRIPTIONS: THIN FILM CIRCUITS; DISTRIBUTED PARAMETER
NETWORKS; REVIEWS; THICK FILM CIRCUITS
IDENTIFIERS: DISTRIBUTED PARAMETER NETWORKS; THIN FILM
CIRCUITS; LAYOUT OPTIMISATION; THICK FILM CIRCUITS

02
Section Class Codes: B2524, B1880, B2522
Unified Class Codes: SMCEAH, ETRAAM, SMCCAX

868133 A761305B, B7608991
OXIDATION OF TITANIUM THIN FILMS
FAIRLEIGH DICKINSON UNIV., MADISON, NJ, USA
J. ELECTROCHEM. SOC. (USA) VOL.122, NO.11 1504-B NOV.
1975. Coden: JESDAN
TITANIUM THIN FILMS EXPOSED TO AN OXIDIZING ARGON ATMOSPHERE
IN THE TEMPERATURE RANGE FROM 30 DEGREES TO 400 DEGREES. IN
SPECIMENS EXPOSED TO THE TEMPERATURE ABOVE 300 DEGREES TWO
STAGES WERE OBSERVED. INITIALLY, RESISTANCE INCREASED LINEARLY
WITH TIME AND TEMPERATURE COEFFICIENT VALUES WERE POSITIVE.
AFTER PROLONGED EXPOSURE RESISTANCE INCREASED EXPONENTIALLY
WITH TIME, AND NEGATIVE TEMPERATURE COEFFICIENTS WERE
OBSERVED. IT IS SUGGESTED THAT THIS BEHAVIOR RESULTS FROM A
PROGRESSIVE OXIDATION AT GRAIN BOUNDARIES. WHEN OXIDATION IS
COMPLETE THROUGH GRAIN BOUNDARIES TO THE SUBSTRATE, CONDUCTION
IS THEN DEPENDENT ON A TUNNELLING PROCESS THROUGH THE
SEMICONDUCTING TITANIUM OXIDE LEADING TO THE OBSERVED
EXPONENTIAL TEMPERATURE AND TIME OF EXPOSURE DEPENDENCE (6
Refs.)
Descripton: METALLIC THIN FILMS; TITANIUM; OXIDATION; THIN
FILM CIRCUITS
Identifiers: RESISTANCE; GRAIN BOUNDARIES; TUNNELLING
PROCESS; 30 TO 400 DEGREES C; TI FILMS; OXIDATION
02
Section Class Codes: A7864, B2524
Unified Class Codes: NVREAU, SMCEAH

868130 B760898B
SCREENS: ESSENTIAL TOOLS FOR THICK FILM PRINTING
FRANCONVILLE, F.
HONEYWELL-BULL, SAINT-OUEN, FRANCE
ELECTRON. AND MICROELECTRON. IND. (FRANCE) NO.209 44-9
1 OCT. 1975 Coden: ENCIAS
DISCUSSES SOME OF THE MAIN PARAMETERS OF SCREENS WHICH ARE
USED, IN THICK FILM TECHNOLOGY, FOR ACHIEVING HIGH DENSITY AND
PRECISE FINE LINE PRINTING FOR MULTI-LAYER CIRCUITS. MATERIAL
SELECTION, CONTROL AND EVOLUTION OF THE SCREEN PARAMETERS ARE
PRESENTED, VERSUS THEIR EFFECT ON THE QUALITY TO BE OBTAINED
AND PRESERVED IN PRODUCING THESE CIRCUITS. AFTER AN EXPERIMENT
OF MANUFACTURING AND USING MASKS, SCREENS WITH MESH COATED BY
EMULSION STENCIL WERE SELECTED AS THE MAIN TOOL FOR THE
APPLICATIONS DESCRIBED
Descripton: THICK FILM CIRCUITS; PRINTED CIRCUITS; PRINTING
; INTEGRATED CIRCUIT PRODUCTION
Identifiers: THICK FILM PRINTING; PRECISE FINE LINE PRINTING
; SCREEN PARAMETERS; SCREEN PRINTING; SCREENS; SCREEN MESH
MATERIALS; HIGH DENSITY PRINTING; MULTILAYER CIRCUITS; COATED
MESH SCREENS
02
Section Class Codes: B2624, B1269
Unified Class Codes: SMCEAH, ADGMAE

868131 B7608989
NEW MATERIALS DEVELOPMENTS
LAIE, G.
ELECTRON. AND MICROELECTRON. IND. (FRANCE) NO.209 50-1
1 OCT. 1975 Coden: ENCIAS
REVIEWS INDUSTRIAL DEVELOPMENT OF THICK FILM INTO NEW,
IMPORTANT AREAS. THE FOLLOWING NEW DEVELOPMENTS ARE BRIEFLY
COVERED: PLASMA DISPLAY TECHNOLOGY; CAVITY PRINTING MATERIALS
AND TECHNIQUES FOR CHIP CARRIERS; DIPPING MATERIALS FOR END
TERMINATIONS (THESE CAN BE USED FOR WRAP AROUNDS ON
CONVENTIONAL SUBSTRATES OR FOR CAPACITOR END TERMINATIONS);
LOW-COST CONDUCTORS FOR THICK FILM (THIS WILL INCLUDE
PLATINUM-SILVER AND NICKEL); LASER STABLE INKS FOR COMMERCIAL
APPLICATIONS SUCH AS AUTOMOTIVE, COMMUNICATIONS OR THERMAL
PRINTERS
Descripton: THICK FILM CIRCUITS; DISPLAY SYSTEMS
Identifiers: CAVITY PRINTING MATERIALS; CHIP CARRIERS;
DIPPING MATERIALS; END TERMINATIONS; LASER STABLE INKS; THICK
FILM CIRCUITS; NEW MATERIALS DEVELOPMENTS; LOW COST CONDUCTORS
; PLASMA DISPLAYS
02
Section Class Codes: B2524, B2098, B2059
Unified Class Codes: SMCEAH, SRMAAC, SCTAAS

868129 B7608987
THICK FILM CONVEYOR FURNACES-CURRENT STATUS
ANIES, A.
MOSTEK CORP., CARROLLTON, TX, USA
SOLID STATE TECHOL. (USA) VOL.18, NO.11 12 NOV. 1975
Coden: SSTEAP
Descripton: THICK FILM CIRCUITS; INTEGRATED CIRCUIT
PRODUCTION; ELECTRIC FURNACES
Identifiers: THICK FILM CIRCUIT PRODUCTION; CONVEYOR
FURNACES; FIRING
02
Section Class Codes: B2522, B5820, B5642
Unified Class Codes: SMCCAX, TMEAAQ, TKKCAQ

868128 B7608986
THICK-FILM TECHNOLOGY
FUPKA, W.
PHILIPS FORSCHUNGSAB, HAMBURG GMBH, HAMBURG, GERMANY
PHILIPS TECH. REV. (NETHERLANDS) VOL.35, NO.5 144-50
1975. Coden: PIREAN
DISCUSSES MANUFACTURE OF HYBRID CIRCUITS BY THE THICK FILM
TECHNOLOGY WHICH IS A MODIFICATION OF THE SCREEN-PRINTING
PROCESS COMBINED WITH A CERAMIC FIRING PROCESS. THE METHOD
MEETS THE REQUIREMENTS PLACED ON THE INTERCONNECTIONS IN FAST
DIGITAL HYBRID CIRCUITS AFTER A GENERAL DESCRIPTION OF THE
PROCESS, THE PROBLEMS ASSOCIATED WITH APPLICATION TO MASS
PRODUCTION ARE DISCUSSED. THE MOST SUCCESS HAS BEEN OBTAINED
WITH CERAMIC AL/SUB 2/O/SUB 3/ SUBSTRATES (96PERCENT PURITY).
GLASS-FRIT PASTES FIRED AT 950-1000 DEGREES, AND SPECIALLY
DEVELOPED SCREENS. THE MANY INDICATIONS POINTING TO A RAPID
GROWTH IN THE USE OF THE METHOD ARE SUMMARIZED. (4 Refs)
Descriptors: HYBRID INTEGRATED CIRCUITS; DIGITAL INTEGRATED
CIRCUITS; THICK FILM CIRCUITS; INTEGRATED CIRCUIT PRODUCTION;
SUBSTRATES
Identifiers: THICK FILM TECHNOLOGY; CERAMIC FIRING PROCESS;
DIGITAL HYBRID CIRCUITS; CERAMIC AL/SUB 2/O/SUB 3/ SUBSTRATES;
GLASS FRIT PASTES; SCREEN PRINTING; INTEGRATED CIRCUIT
PRODUCTION
02
Section Class Codes: B2522, B2540
Unified Class Codes: SMCCAX, SMEAAB

868127 B7608985
THE EFFECT OF THE TRIMMING TECHNIQUE FOR TOP HAT TYPE
RESISTORS ON THE DESIGN PROCESS
HALOU, I.
BIE ELEKTRONIKAI TECHNOLOGIA TANSZEK, BUDAPEST, HUNGARY
ELECTROTECH. AND MICROTECH. (HUNGARY) VOL.14, NO.9 275-7
SEPT. 1975. Coden: FIKWAK
IN DESIGNING THE TOPOLOGY OF THICK FILM INTEGRATED CIRCUITS
THE USE OF THE SO-CALLED TOP HAT TYPE RESISTORS CAN BE
VALUABLE ON ACCOUNT OF THE GREAT DEGREE OF POSSIBLE VALUE
ADJUSTMENT. THE TRIMMING METHOD HAS A TIGHT CONNECTION OF
CERTAIN ASPECTS OF THE DESIGN (5 Refs)
Descriptors: THICK FILM RESISTORS; THICK FILM CIRCUITS
Identifiers: TRIMMING TECHNIQUE; TOP HAT TYPE RESISTORS;
THICK FILM INTEGRATED CIRCUITS; TOPOLOGY DESIGN; THICK FILM
RESISTORS
02
Section Class Codes: B2522, B2540, B2210
Unified Class Codes: SMCCAX, SMEAAB, SEEAAS
Language: HUNGARIAN

868126 B7608983
SOME SYSTEM CONSIDERATIONS OF THICK FILMS
MORAN, P.L.

LOUGHBROUGH UNIV., LOUGHBROUGH, ENGLAND
ELECTRON. IND. (GB) VOL.1, NO.4 19-21 DEC. 1975
Coden: EIN009
DISCUSSES THE PROPERTIES OF ALUMINA AND THE COMPROMISES
REQUIRED IN THE DESIGN OF ACTIVE FILTERS (21 Refs)
Descriptors: THICK FILM CIRCUITS; ACTIVE FILTERS; SUBSTRATES
Identifiers: SYSTEM CONSIDERATIONS; ALUMINA; ACTIVE FILTERS;
DESIGN COMPROMISES; THICK FILM CIRCUITS; PROPERTIES OF ALUMINA
; AL/SUB 2/O/SUB 3/
02
Section Class Codes: B2522, B1880
Unified Class Codes: SMCCAX, ETRAAM

868125 B7608982
THICK-FILM RESISTOR NETWORKS REDUCE DIGITAL SYSTEM COSTS
LODDON, R.
ELECTRON (GB) NO.84 21-2, 25 6 NOV. 1975 Coden:
ELINCL
RESISTORS CAN BE A SIGNIFICANT COST ELEMENT IN A TYPICAL
DIGITAL SYSTEM, AVAILABLE BOARDSPACE, HANDLING TIME AND
ASSEMBLY TIME ARE MAJOR COST FACTORS. THE INCORPORATION OF
RESISTORS IN A PREPACKAGED NETWORK CAN SIGNIFICANTLY REDUCE A
SYSTEM COST
Descriptors: DIGITAL CIRCUITS; THICK FILM RESISTORS;
PACKAGING; ECONOMICS; THICK FILM CIRCUITS
Identifiers: DIGITAL SYSTEM; COST FACTORS; PREPACKAGED
NETWORK; THICK FILM RESISTOR NETWORKS
02
Section Class Codes: B2522, B2210, B1266, B1870
Unified Class Codes: SMCCAX, SEEAAS, ADOHAH, ETNAAP

868123 B7608980
A NEWLY DEVELOPED MULTILAYER INTERCONNECTION TECHNIQUE
(THICK FILM SCREENING)
KOCIS, A.
APPL. SCI. DIV., SHERBROOKE UNIV., QUEBEC, CANADA
ELECTRON. AND MICROELECTRON. IND. (FRANCE) NO.209 62-3
1 OCT. 1975. Coden: ENCIAS
DESCRIBES A NOVEL METHOD TO PRODUCE PRACTICAL INTERCONNECTION
FOR MULTILAYER STRUCTURES DOWN TO 3 MIL DIAMETER WITH VERY
HIGH YIELD (OVER 90%) PREVIOUSLY IMPOSSIBLE TO OBTAIN WITH
CONVENTIONAL THICK FILM SCREENING TECHNIQUES
Descriptors: THICK FILM CIRCUITS; HYBRID INTEGRATED CIRCUITS
; PRINTED CIRCUITS; INTEGRATED CIRCUIT PRODUCTION
Identifiers: MULTILAYER INTERCONNECTION TECHNIQUE; NOVEL
METHOD; 3 MIL DIAMETER; HIGH YIELD; THICK FILM SCREENING
TECHNIQUES; SUPERCENT YIELD; THICK FILM CIRCUITS; HYBRID ICs;
HIGH LINE DENSITIES
02
Section Class Codes: B2522, B2540
Unified Class Codes: SMCCAX, SMEAAB

867714 B7608502
TRIMMING TO 'TENTHS' TAKES TECHNIQUE (THICK-FILM RESISTOR
TRIMMING FOR MICROMINIATURE CIRCUITS)
FISHEL, J.
MICROELECTRONICS (GB) VOL.5, NO.2 57-8 1973 Coden:

MICRO
THICK-FILM RESISTOR TRIMMING TECHNIQUES ARE NOW REASONABLY
WELL ESTABLISHED AND NO LONGER POSE ANY GREAT PRODUCTION
DIFFICULTIES WITH THE LARGE RESISTORS FOUND IN CONVENTIONAL
HYBRID CIRCUITS. HOWEVER, IN MICROMINIATURE CIRCUITS TRIMMING
EACH RESISTOR CAN BE QUITE AN ART. THE AUTHOR DESCRIBES AN
ABRASIVE JET TRIMMING TECHNIQUE WHICH CAN BE USED EFFICIENTLY
TO TRIM ANY SPECIFICATION

Descriptores: THICK FILM RESISTORS; THICK FILM CIRCUITS
Identifiers: RESISTOR TRIMMING; MICROMINIATURE CIRCUITS;
ABRASIVE JET TRIMMING TECHNIQUE; THICK FILM RESISTORS; HYBRID
ICS

Section Class Codes: B2210, B2522
Unified Class Codes: SEEAAS, SMCCAX

867562 B7608305
1 MHZ TO 1.5 GHZ THIN-FILM AMPLIFIER FEATURES THREE STAGES
IN A 10-3 CAN
HUBBS, G.

AVANTEK INC., SANTA CLARA, CA, USA
MICROWAVE SYST. NEWS (USA) VOL.5, NO.3 46-7 JUNE-JULY
1974 Coden: NWSNAG
By EXTENDING THE CONCEPT OF THIN-FILM WIDE-BAND AMPLIFIERS TO
INCLUDE MULTIPLE STAGES, THIS NEW UNIT OFFERS GAIN,
PERFORMANCE AND COST BENEFITS

Descriptores: MICROWAVE AMPLIFIERS; WIDE-BAND AMPLIFIERS;
SOLID-STATE MICROWAVE CIRCUITS; THIN FILM CIRCUITS
Identifiers: MICROWAVE AMPLIFIER; THIN FILM; 1 MHZ TO 1.5
GHZ; THREE STAGES; WIDE-BAND; SINGLE SUBSTRATE; COMPUTER AIDED
DESIGN

Section Class Codes: B1840, B1020, B2524
Unified Class Codes: ETMAAB, ETEAAD, SMCEAH

860135 B7604321, C7605003
A 10-BIT DIGITAL-ANALOGUE CONVERTOR
AJUEK, B.
SLOVACI TECH. (CZECHOSLOVAKIA) VOL.23, NO.9 325-6
SEPT. 1975 Coden: SDTEAM
DESCRIBES A 10-BIT CONVERTOR EMPLOYING AN ACCURATE R-2R
CIRCUIT: A SWITCH WITH A SMALL INTERNAL RESISTANCE AND LOW
VOLTAGE OFFSET WHICH EMPLOYS THREE TRANSISTORS; AND AN
OPERATIONAL OUTPUT AMPLIFIER, USING A THIN FILM RESISTOR
CIRCUIT, HIGHER SPEED AND MORE FAVOURABLE THERMAL BEHAVIOUR
CAN BE OBTAINED

RESISTORS; THIN FILM CIRCUITS; OPERATIONAL AMPLIFIERS
Identifiers: THIN FILM RESISTOR CIRCUIT; SPEED; THERMAL
BEHAVIOUR; DIGITAL ANALOGUE CONVERSION; OPERATIONAL AMPLIFIER
02

Section Class Codes: B1890, C9960, B2210, B2524
Unified Class Codes: ETMAAC, XTAAAS, SEEAAS, SMCEAH
Language: CZECH

866372 B76063757
PRODUCTION EXPERIENCES OF THIN FILM HYBRID CIRCUITS FOR
SERIES OF 8000 TELEPHONE CHANNELS IN N2 TECHNIQUE
MOSCA, E.; CANALE, G.P.
MAGCOM ITALIANA, GENOVA, ITALY
ALTA FREQ. (ITALY) VOL.44, NO.9 524-35 SEPT. 1975
Coden: ALFRAJ

DIFFICULTIES ENCOUNTERED IN THE MANUFACTURE OF LARGE SCALE
(8000 CHANNEL, 72000 MICROCIRCUIT, 40000 RESISTIVE NETWORKS)
THIN FILM CIRCUITS ARE DESCRIBED. PRODUCTION PROCESS IS
DETAILED INCLUDING COMPONENT DETAILS, PRODUCTION PROGRAMMES,
TOLERANCES, ASSEMBLY ETC. UNDERLYING SPECIAL DIFFICULTIES
ENCOUNTERED AND BREAK DOWNS. SECOND PART DEALS WITH
OPERATIONAL EXPERIENCES DURING FIRST 1000 HOURS OF SERVICE
COMPARING THE PERFORMANCE WITH CONVENTIONAL COMMUNICATION
CIRCUITS. NEED FOR DESIGN STANDARDIZATION AND PROCESS
AUTOMATION IS UNDERLINED IN CONCLUSION

Descriptores: HYBRID INTEGRATED CIRCUITS; THIN FILM CIRCUITS;
INTEGRATED CIRCUIT PRODUCTION; TELEPHONE EQUIPMENT
Identifiers: THIN FILM HYBRID CIRCUITS; 8000 TELEPHONE
CHANNELS IN N2 TECHNIQUE; PRODUCTION EXPERIENCE
02

Section Class Codes: B3550, B2540, B2524
Unified Class Codes: FEGAAC, SMEAA8, SMCEAH
Language: ITALIAN

855433 87610438, 87604738
AN EVAPORATOR FACILITY FOR DEPOSITION OF MULTIELEMENT THIN
FILM PATTERNS
MURRAY, L.H.
RCA LABS., PRINCETON, NJ, USA
J. VAC. SCI. AND TECHNOL. (USA) VOL.12, NO.1 555
JAN.-FEB. 1975 Coden: JVSTAL

21ST NATIONAL SYMPOSIUM OF THE AMERICAN VACUUM SOCIETY
8-11 OCT 1974 ANAHEIM, CALIF., USA
ABSTRACT ONLY, SUBSTANTIALLY AS FOLLOWS, A FACILITY WHICH
FABRICATES A MASK CHANGER AND EVAPORATOR, DESIGNED FOR USE IN
DEPOSITING THIN FILM CIRCUITS FOR EXPERIMENTAL PURPOSES IS
OUTLINED. MECHANICAL PROBLEMS INVOLVED IN ITS USE ARE
DESCRIBED.

IDENTIFIERS: THIN FILM CIRCUITS; INTEGRATED CIRCUIT
PRODUCTION; VAPOUR DEPOSITION; VACUUM TECHNIQUES
MASK CHANGER; EVAPORATOR; THIN FILM PATTERNS;
MECHANICAL PROBLEMS

Section Class Codes: B2524, A9112, A0634
Unified Class Codes: SMCEAH, ZCCAX, BGCEAR

Unified Class Codes: SMCEAH

855431 87604736
COST EFFICIENCY OF THICK-FILM CONDUCTORS
RIENER, D.E.
BOEING MICROELECTRONICS, SEATTLE, WA, USA
SOLID STATE TECHNOL. (USA) VOL.18, NO.10 42-5 OCT.
1975 Coden: SSTEAP

COST CONSIDERATIONS IN THE SELECTION OF THICK FILM MATERIALS
ARE DISCUSSED. COST PERFORMANCE FACTORS ARE DEFINED THAT
PERMIT THE COMPARISON OF THE COST EFFICIENCY OF DEFINED THAT
METAL-FILM OR THICK-FILM CONDUCTORS. DEPOSITION WEIGHT IS USED
TO CHARACTERISE CONDUCTOR INKS FOR EFFICIENT USE IN HYBRID
CIRCUITS (2 Refs)

IDENTIFIERS: THICK FILM CIRCUITS
CONDUCTOR INKS; HYBRID CIRCUITS; THICK FILM MATERIALS;
COST EFFICIENCY;
02

Section Class Codes: B2522
Unified Class Codes: SMCCAX

855432 87604737
STUDIES ON THE AL/SUB 2/O/SUB 3/-TI-MO-AU METALLIZATION
SYSTEM
HARRIS, J.M.; LUQUJAO, E.; CAMPISANO, S.U.; NICOLET, M.A.;
SHIVA, R.
CALIFORNIA INST. TECHNOL., PASADENA, USA
J. VAC. SCI. AND TECHNOL. (USA) VOL.12, NO.1 524-7
JAN.-FEB. 1975 Coden: JVSTAL

21ST NATIONAL SYMPOSIUM OF THE AMERICAN VACUUM SOCIETY
8-11 OCT 1974 ANAHEIM, CALIF., USA
THE EXPERIMENTAL PROCEDURE FOR SAMPLE PREPARATION AND
METALLIZATION STRUCTURES IS DESCRIBED. RESULTS OF BI-METAL
COUPLES MO-AU AND TI-MO ARE FIRST DISCUSSED AND SCHEMATIC
RESULTS ARE GIVEN. SIMILAR RESULTS ARE DISCUSSED FOR THE
TI-MO-AU TRIPLE LAYER. THE EFFECT OF A CARBON SUBSTRATE IS
ALSO CONSIDERED. IT IS SHOWN THAT MO-AU BILAYERS MIX DURING
DEPOSITION AND THAT AT 600 DEGREES, 1000 AA OF MO DOES NOT
PREVENT TI-AU MIXING ALTHOUGH O/SUB 2/ INHIBITS MOTION OF TI
THROUGH MO (11 Refs)

IDENTIFIERS: METALLIZATION; THIN FILM CIRCUITS; INTEGRATED
CIRCUIT PRODUCTION
ANALYSIS; SAMPLE PREPARATION; BACKSCATTERING SPECTROMETRY
3/-TI-MO-AU METALLIZATION SYSTEM; MULTILAYER STRUCTURES;
BI-METAL COUPLES; C-SUBSTRATE; C-MIXING; DIFFUSION; PRESENCE

855430 87604735
MEASUREMENT OF THE SOLDERABILITY OF THICK-FILM CIRCUITS:
RELATIONSHIP BETWEEN SOLDER STRENGTH AND A SOLDERABILITY TEST
PANTANELLI, G.P.
BELL TELEPHONE LABS. INC., ALLENTOWN, PA, USA
SOLID STATE TECHNOL. (USA) VOL.18, NO.10 39-41 OCT.
1975 Coden: SSTEAP

RESULTS OF SOLDER WETTING, AS MEASURED BY A SURFACE TENSION
APPARATUS OF SOLDER AND TO THE PULL STRENGTH ON A SPECIMEN
TO THE SPECIMEN. THE INFLUENCE OF AN 85 DEGREE/ASPERCENT
RELATIVE HUMIDITY AGING CONDITION ON THE BOND HOLDING STRENGTH
OF THE SOLDER JOINT IS ALSO INVESTIGATED TO EVALUATE THE LONG
TERM RELIABILITY OF LEADS SOLDERED TO SEVERAL THICK FILM
SOLDER PADS BY TWO SOLDER COMPOSITIONS, 62SN-36PB-2AG AND
1.05N-97.5PB-1.5AG (4 Refs)

IDENTIFIERS: THICK FILM CIRCUITS; SOLDERING; RELIABILITY
TEST; SOLDER WETTING; SOLDER STRENGTH; SOLDERABILITY
APPEARANCE; PULL STRENGTH; SURFACE TENSION APPARATUS; VISUAL
STRENGTH; RELIABILITY; SOLDER PADS
02

Section Class Codes: B2522, B1263
Unified Class Codes: SMCCAX, ADGAL

855427 B7604732
SCREEN PRINTING STENCILS FOR THICK FILM CIRCUITS
FREUDENHEIM, H.
MICROMASK LTD., LONDON, ENGLAND
ELECTRON. PROD. METHODS AND EQUIP. (GG) VOL. 4, NO. 7 37-9
SEPT. 1975 Coden: ELPD04
OUTLINES SEVERAL FACTORS WHICH INFLUENCE THE QUALITY OF
THICK FILM CIRCUITS AND DESCRIBES IN DETAIL TWO SCREEN
PRINTING STENCILS WHICH MEET THE SPECIAL REQUIREMENTS OF THE
MICRO-ELECTRONICS INDUSTRY. 'DURAMASK' AND 'DURAMET'.
'DURAMASK' IS A POLYMER STENCIL WHICH IS COMPLIANT TO
ACCURATE THE UNEVEN SURFACE FEATURES WHICH CAN BE
ENCOUNTERED ON THICK FILM SUBSTRATES. 'DURAMET' IS A METAL
MASK WHICH HAS BEEN METALLURGICALLY BONDED TO A WIRE CLOTH. TO
COMBINE ITS STABILITY WITH MAXIMUM ELASTICITY, DURAMET IS
NORMALLY WELDED TO AN OUTER POLYMER MESH.
D-Scriptors: THICK FILM CIRCUITS; INTEGRATED CIRCUIT
PRODUCTION; MASKS
Identifiers: SCREEN PRINTING STENCILS; POLYMER STENCIL;
METAL MASK; THICK FILM CIRCUITS PRODUCTION; INTEGRATED CIRCUIT
02
Section Class Codes: B2522
Unified Class Codes: SMCAX

ACTIVE RC FILTERS IN THE HYBRID THIN TANTALUM FILM TECHNIQUE
BOSSELMANN, W.
SIEMENS AG, MUNICH, GERMANY
ELEKTRON. INT. (AUSTRIA) NO. 9 313-16 1975 Coden:
EKITA9
THE GENERAL MATHEMATICAL FORMULAE FOR ACTIVE HIGH-PASS AND
LOW-PASS FILTERS USING R-C NETWORKS ARE GIVEN BUT NOT DESIGN
METHODS. WITH A SINGLE OPERATIONAL AMPLIFIER AND A QUALITY
FACTOR $Q/SUB R/ < 10$, THE COMPONENT TOLERANCES ARE NOT CLOSE
TANTALUM FILMS SPUTTERED ON A CERAMIC SUBSTRATE ARE USEFUL FOR
CONSTRUCTION OF THE PASSIVE ELEMENTS OF HYBRID CIRCUITS AS
OXIDATION OF THE TA TO THE PENTOXIDE PROVIDES A CAPACITOR
DIELECTRIC (5 Refs)
D-Scriptors: ACTIVE FILTERS; HYBRID INTEGRATED CIRCUITS;
THIN FILM CIRCUITS
Identifiers: OPERATIONAL AMPLIFIER; QUALITY FACTOR;
COMPONENT TOLERANCES; PASSIVE ELEMENTS; ACTIVE RC FILTERS;
PASS FILTERS; HIGH PASS FILTERS; HYBRID THIN TA FILM; HYBRID
INTEGRATED CIRCUITS; TA OXIDATION
02
Section Class Codes: B1880, B2540, B2524
Unified Class Codes: ETRAAM, SMEAAB, SMCEAH
Language: GERMAN

855426 A7604007, B7604731
TECHNIQUE AND APPLICATIONS OF AUGER ELECTRON SPECTROSCOPY
PALMBERG, P.W.
PHYS. ELECTRONICS INDUSTRIES INC., EDEN PRAIRIE, MN, USA
ELECTROCHEMICAL SOC.
ELECTROCHEMICAL SOCIETY SPRING MEETING. (EXTENDED ABSTRACTS)
926-7 1975
11-16 MAY 1975 TORONTO, CANADA
ELECTROCHEMICAL SOC.
THE SENSITIVITY OF ELEMENT DETECTION IN AUGER ELECTRON
SPECTROSCOPY IS DISCUSSED. IT IS SHOWN THAT THE IN DEPTH
DISTRIBUTION OF ELEMENTS IN THIN FILM STRUCTURES CAN BE
OBTAINED BY COMBINING THE METHOD WITH THIN FILM SPUTTER
ETCHING. APPLICATIONS TO INTERFACIAL CHEMISTRY, EXPLORATION IN
THIN FILM STRUCTURES ON MICROCIRCUITS, AND TWO DIMENSIONAL
IMPURITY DISTRIBUTIONS AT GRAIN BOUNDARIES ARE MENTIONED
D-Scriptors: THIN FILM CIRCUITS; AUGER EFFECT; ELECTRON
SPECTROSCOPY
Identifiers: AUGER ELECTRON SPECTROSCOPY; ELEMENT DETECTION;
INERT GAS SPUTTER ETCHING; INTERFACIAL CHEMISTRY; THIN FILM
STRUCTURES; MICROCIRCUITS; IMPURITY DISTRIBUTIONS; TRACE
06
Section Class Codes: B2520, A0695
Unified Class Codes: SMCAL, B6ZMZ

844722 B7602218
A THICK-FILM AMPLIFIER SIGNAL CONDITIONING SYSTEM
BRAY, R.W.
ADVANCED DATA SYSTEMS, DOUGLAS AIRCRAFT CO., LONG BEACH, CA,
USA
WASHBURN, B.:
ISA

SUM. 0 B7604 261 X
PROCEEDINGS OF THE 21ST INTERNATIONAL INSTRUMENTATION
SYMPOSIUM 207-11 1975
17-21 MAY 1975 PHILADELPHIA, PA., USA
ISA PITTSBURGH, PA., USA

SINCE ITS INCEPTION IN 1968, THE SIGNAL CONDITIONING SYSTEM
USED BY THE DOUGLAS AIRCRAFT FLIGHT TEST DIVISION HAS UTILIZED
A PRECISION HIGH-GAIN DIFFERENTIAL D.C.-COUPLED AMPLIFIER PER
DATA CHANNEL. THE PERFORMANCE OF THE AMPLIFIERS WAS UNIQUE IN
SUCH AREAS AS: GAIN SELECTION OF 0.16 TO 1000 IN STEPS OF
TIMES 2.5; FILTER SELECTION OF 10 TO 150 HZ; RESISTOR
CALIBRATION VALUE SELECTION; TEMPERATURE DRIFT NOT TO EXCEED
30 MV AT THE OUTPUT OVER 100 DEGREES WITH 1K SOURCE UNBALANCE
OR 10K SOURCE RESISTANCE IN EACH LEG OF THE INPUT; AND AN
OUTPUT OFFSET ADJUSTMENT OF 40V- FULL SCALE. A RECENTLY
DEVELOPED REPLACEMENT AMPLIFIER UTILIZES A THICK-FILM HYBRID
HIGH-GAIN DIFFERENTIAL AMPLIFIER. THE POWER REQUIREMENTS HAVE
BEEN DECREASED BY 75 PERCENT AND THE SIZE DECREASED BY 70
PERCENT. THIS PAPER DESCRIBES THE NEW AMPLIFIER DESIGN AND
SPECIFICATIONS. THE THICK-FILM HYBRID'S CONSTRUCTION AND
ASSEMBLY, AND THE SYSTEM'S MODULAR PHILOSOPHY (11 Refs)
Descriptors: DIFFERENTIAL AMPLIFIERS; THICK FILM CIRCUITS;
HYBRID INTEGRATED CIRCUITS
Identifiers: AMPLIFIER DESIGN; THICK FILM AMPLIFIER SIGNAL
CONDITIONING SYSTEM; HYBRID INTEGRATED CIRCUITS; DIFFERENTIAL
AMPLIFIERS
06

Section Class Codes: B4250, B1840, B2540, B2522
Unified Class Codes: BECMAA, ETHAAB, SMEAAD, SMCCAX

843771 B7601101
BETTER MATERIALS AND EQUIPMENT TRIM COSTS AND RAISE
RELIABILITY
GROSSMAN, M.
ELECTRON. DES. (USA) VOL.23, NO.15 24. 26. 28. 30. 32
19 JULY 1975 Coden: ELODAW

ADVANCES IN THICK-FILM TECHNOLOGY FOR HYBRID CIRCUITS,
INCLUDING IMPROVED THICK-FILM PRINTING MACHINES AND SCREENS,
INCREASED VARIETY OF INKS OR PASTES, IMPROVEMENTS IN COMPONENT
ATTACHMENT MATERIALS AND TECHNIQUES, HIGHER POWER-HANDLING
CAPABILITY AND FUNCTIONAL TRIMMING, ARE DISCUSSED (3 Refs)
Descriptors: INTEGRATED CIRCUIT PRODUCTION; RELIABILITY;
CIRCUITS; HYBRID INTEGRATED CIRCUITS; PACKAGING; THICK FILM
CIRCUITS

Identifiers: COSTS; RELIABILITY; HYBRID CIRCUITS; PRINTING
MACHINES; SCREENS; INKS; PASTES; COMPONENT ATTACHMENT
TECHNIQUES
06

HANDLING CAPABILITY; PACKAGING
02
Section Class Codes: B2540, B1263, B2522
Unified Class Codes: SMEAAB, ADOGAL, SMCCAX

843720 B7601032
APPLICATIONS OF LOW TEMPERATURE RF PLASMA ETCHING TO
THIN-FILM TECHNOLOGY
JACOB, A.
PLASMA RANNO LAB., PROCESS CONTROL DIV., WALTHAM, MA, USA
ELECTROCHEMICAL SOC.
ELECTROCHEMICAL SOCIETY SPRING MEETING. (EXTENDED ABSTRACTS)
457-9. 1975

11-16 MAY 1975 TORONTO, CANADA
ELECTROCHEMICAL SOC. PRINCETON, N.J., USA
ONE OF THE MORE IMPORTANT CONSIDERATIONS IN THE FABRICATION
OF INTEGRATED CIRCUITS FROM THIN FILMS IS THE PROFILE OF THE
STEPS WHICH ARE TO BE ETCHED IN THE VARIOUS STRUCTURES. ALONG
WITH SPECIAL REQUIREMENTS FOR FINE RESOLUTION PATTERNING, A
UNIQUE METHOD HAS BEEN DEVELOPED TO RISE THE FINAL ETCHED
PROFILE FROM THE EVER-EXISTANT ELECTRIC FIELD NONUNIFORMITIES.
THIS METHOD EMPLOYS INDUCTIVE RF POWER COUPLING AND A
PERFORATED METALLIC MATERIAL HANDLING ZONE WITHIN WHICH
SUBSTRATES ARE MAINLY EXPOSED TO EVENLY DISPENSED ELECTRICALLY
NEUTRAL ACTIVE SPECIES, BY ALLOWING DIFFERENTIALLY
ELECTRICALLY NEUTRAL SPECIES WITHIN THE PERFORATED PROCESSING
VOLUME. THE EFFECTS OF EXTERNAL ELECTRIC FIELD PERTURBATIONS
ARE PRACTICALLY NEUTRALIZED, THUS ENABLING EXTREMELY UNIFORM
ETCHING THROUGHOUT AN ENTIRE SUBSTRATE BATCH AT SUBSTANTIALLY
REDUCED GAS TEMPERATURES.

Descriptors: INTEGRATED CIRCUIT PRODUCTION; ETCHING; PLASMA
Identifiers: THIN FILM CIRCUITS
Identifiers: LOW TEMPERATURE; RF PLASMA ETCHING; INTEGRATED
CIRCUITS; THIN FILMS; ETCHED PROFILE; ELECTRIC FIELD
NONUNIFORMITIES; PERFORATED METALLIC MATERIAL HANDLING ZONE;
SUBSTRATE BATCH
06

Section Class Codes: B2524
Unified Class Codes: SMCEAH

B7C3718 B7C0130
TANTALUM NITRIDE THIN FILM CIRCUITS ON POLYIMIDE
TERADA, T.; USHIGOME, M.; TAMAKI, S.; TORI DIV., NAKAHARA-KU,
NIPPON ELECTRIC CO., SEMICONDUCTOR
KAWASAKI CITY, JAPAN

ELECTROCHEMICAL SOC.
ELECTROCHEMICAL SOCIETY SPRING MEETING. (EXTENDED ABSTRACTS)
122-3 1975

11-16 MAY 1975 TORONTO, CANADA
ELECTROCHEMICAL SOC., PROCESSION, N.J., USA
TANTALUM NITRIDE THIN FILM CIRCUITS SPUTTERED ON POLYIMIDE
HAVE BEEN STUDIED. WHEN SPUTTERED AT 150 DEGREES, THE AUTHORS
HAVE FOUND THE BETTER FILM FOR WHICH THE TEMPERATURE
COEFFICIENT OF RESISTANCE HAS BEEN FROM -60 TO +20 PPM/
DEGREE AT THE TEMPERATURE RANGE OF 25 DEGREE TO 125
DEGREE. AND THE CHANGE OF THE RESISTANCE HAS BEEN +1.0 PERCENT
AT 120 DEGREE FOR 3600 HOURS. SOME PROBLEMS IN THE
PRODUCTION OF STABLE THIN FILMS ARE DISCUSSED
Description: SPUTTERING THIN FILM CIRCUITS

Descriptors: SPUTTERING; THIN FILM CIRCUITS
 Identifiers: THIN FILM CIRCUITS; POLYIMIDE; SPUTTERING

06 Section Class Codes: B2524
Unified Class Codes: SNCEAH

843716 07601028
TEMPERATURE MEASURING DEVICE FOR THICK-FILM IC'S
NDAKOWSKI, A.; JAKOWSKI, J.
ELEKTRONKA (POLAND) VOL.16, NO.7-B 312-14 1975
CODING: ENR1BZ
THE PAPER DEALS WITH MEASUREMENT PROBLEMS OF TEMPERATURE DISTRIBUTION IN INTEGRATED CIRCUITS. SPECIAL ATTENTION IS PAID TO THE PROBLEM OF MEASURING TEMPERATURE IN THICK-FILM IC'S. A MEASUREMENT DEVICE FOR THICK-FILM IC INVESTIGATION IS DESCRIBED (5 Refs)

Identifiers: TEMPERATURE MEASURING DEVICE; THICK FILM IC'S; INTEGRATED CIRCUITS; INFRARED RADIATION DETECTION

02
 Section Class Codes: B2522, B4147, B4240
 Unified Class Codes: SMCCAX, BREMAA, BECK
 Language: POLISH

842715 BT601027
SCREENPRINTING THICK-FILM
BYELER, J.
CIRCUITS MANUF. (USA)
Cordun: CMECAF

VOL.15, NO.5 32-3 MAY 1975

Cod m.: CM-DAF
Discusses COMMON PROBLEMS ENCOUNTERED IN SCREENPRINTING,
E.G., SCREEN FATIGUE, EFFECTS OF HANDLING DURING CLEANING,
SCREEN POSITIONING, SETTING SOURCEGE BLADE PRESSURE ETC.
SUGGESTS THAT IMPROVEMENTS IN INKS PLAY AN IMPORTANT ROLE IN
THICK-FILM PRINTING ADVANCES AND FORECASTS THE DEVELOPMENT OF
METALLIC SOLUTIONS AS POTENTIAL SUCCESSORS OF THE METALLIC

PARTICLE SUSPENSION (4 Refs)
 Descriptors: PHOTOLITHOGRAPHY; INTEGRATED CIRCUIT PRODUCTION
 ; THICK FILM CIRCUITS
 ; Identifiers: SCREENPRINTING; SCREEN FATIGUE; CLEANING;
 SCREEN POSITIONING; SQUEEGEE BLADE; PRESSURE; METALLIC
 SOLUTIONS; METALLIC PARTICLE SUSPENSION; INTEGRATED CIRCUIT
 PRODUCTION; PHOTOLITHOGRAPHY

02 Section Class Codes: B2522
Unified Class Codes: SMCCAX

843309 8760566
THIN FILM NETWORKS IN FREQUENCY AND TIME DOMAIN
KULLA, K.
KOT., BERLIN, GERMANY
NACHRICHTENTECH. ELEKTRON., (GERMANY)
1975
36 1975 Code: N1ELAP

336 1975 Codon: NI2AP
THE USE OF VARIOUS INTEGRATION METHODS FOR FILTER NETWORKS
15 OUTLINED. PROBLEMS OF INTEGRATION IN THE REALIZATION OF
SELECTIVE NETWORKS AND DELAY CHAINS ARE DISCUSSED DEALING WITH
THE REQUIREMENTS FOR ACTIVE RC STRUCTURES WHICH ARE SUITABLE
FOR HYBRID CONSTRUCTION (2 Refs)

FOR HYBRID CONSTRUCTION (2, 3, 4, 5)
Descriptors: ACTIVE FILTERS; THIN FILM CIRCUITS
Identifiers: INTEGRATION METHODS; FILTER NETWORKS; ACTIVE RC
STRUCTURES; HYBRID CONSTRUCTION; THIN FILM NETWORK; FREQUENCY
DOMAIN; TIME DOMAIN

02
Section Class Codes: B1880, B3524
Unified Class Codes: ETRAM, SMCEA
Language: GERMAN

B35886 B7541809, C7528895
MANUFACTURE OF MAGNETIC HEAD
Patent No.: UK 1395017 Assignee: IBM CORP Filed: 1
DEC. 1972
Original Patent Appl. No.: US 211554
Priority Date: 23 DEC 1971
21 MAY 1975
A MAGNETIC UNDERLAYER IS DEPOSITED ON A NON-MAGNETIC
SUBSTRATE, AND ON IT TWO LATERALLY SPACED ELECTRICALLY
CONDUCTIVE WINDINGS ARE DEPOSITED, AND OVER THESE A MAGNETIC
OVERLAYER IS SPACED FROM THE UNDERLAYER EXCEPT AT ITS ENDS, TO
FORM A CLOSED MAGNETIC PATH LINKING THE TWO WINDINGS TO FORM A
TRANSFORMER. THE ELECTRICAL PROPERTIES OF THE TRANSFORMER ARE
THEN TESTED, AND IT IS THEN SEVERED BETWEEN THE TWO WINDINGS,
SO THAT THE SEVERED PART INCLUDING THE FIRST WINDING FORMS THE
MAGNETIC HEAD. THE TRANSFORMER IS TESTED BY APPLYING A CURRENT
TO ONE WINDING AND MEASURING THE INDUCED CURRENT IN THE OTHER.
DESCRIPTIONS: MAGNETIC HEADS; TRANSFORMER TESTING;
TRANSFORMER WINDINGS; THIN FILM CIRCUITS
Identifiers: MAGNETIC HEAD; MAGNETIC UNDERLAYER; CONDUCTIVE
WINDINGS; MAGNETIC OVERLAYER; THIN FILM TRANSFORMER
OH
Section Class Codes: B2760, B2220, C9680
Unified Class Codes: STKAAL, SEKAAB, XMAAAR

B35481 B7541655, C7528678
A TECHNOLOGY FOR HIGH SPEED COMPUTER SYSTEMS
HULLOCK, S.; KINNIMONT, D.J.; MARTON, N.V.
PILSEY CO. LTD.; ALLEN CLARK RES. CENTRE, CASWELL, ENGLAND
IERE, INTERNAT. SOC. HYBRID MICROELECTRONICS, IEE, INST.
PHYS., IEE
SBN 0 903748 25 8
CONFERENCE ON HYBRID MICROELECTRONICS 143-57 1975
9-11 SEPT. 1975 LOUGHBOROUGH, LEICS., ENGLAND
IERE LONDON, ENGLAND

THIS PAPER DESCRIBES A TECHNOLOGY DEVELOPED TO REDUCE THE
AVERAGE INTERCONNECTION DELAY IN LARGE HIGH SPEED COMPUTER
SYSTEMS. MULTILAYER THICK FILM CIRCUITS ARE USED TO ACHIEVE A
SUBSTANTIAL PACKING DENSITY IMPROVEMENT OVER EXISTING SYSTEMS.
THE TYPICAL INTERCONNECTION LENGTH OBTAINED IS 1 CM AND THE
DELAY DUE TO THIS IS OF THE ORDER OF 0.15 NSECS. POWER
DISSIPATIONS OF UP TO 20 WATTS MAY BE DISSIPATED BY UP TO 24
CHIPS ON A SINGLE 2.5 CM² CM CERAMIC SUBSTRATE AND 54 SUCH
SUBSTRATES FORM A SINGLE 'THREE DIMENSIONAL' MODULE (11
Ref.)

Descriptors: THICK FILM CIRCUITS; HYBRID INTEGRATED CIRCUITS
: COMPUTER ARCHITECTURE
Identifiers: HIGH SPEED COMPUTER SYSTEMS; INTERCONNECTION
DELAY; PACKING DENSITY; CERAMIC SUBSTRATE; MULTILAYER THICK
FILM CIRCUITS; POWER DISSIPATION
06
Section Class Codes: B2522, B2540, C9460
Unified Class Codes: SMCCAX, SMEAAB, XGGAAN

B35381 B7541725, C7528351
MICROCIRCUIT THERMAL DESIGN TABLES AND COMPUTER PROGRAM FOR
TWO-DIMENSIONAL LAYOUTS
HAMBING, P.G.; DEAN, D.J.
METALL. DIV. AMRE, ALDERMASTON, ENGLAND
IERE, INTERNAT. SOC. HYBRID MICROELECTRONICS, IEE, INST.
PHYS., IEE
SBN 0 903748 25 8
CONFERENCE ON HYBRID MICROELECTRONICS 191-204 1975
9-11 SEPT. 1975 LOUGHBOROUGH, LEICS., ENGLAND
IERE LONDON, ENGLAND

TWO THERMAL DESIGN AIDS ARE DESCRIBED FOR THE EVALUATION OF
TEMPERATURE DISTRIBUTIONS ON HYBRID MICROELECTRONICS. THE FIRST
IS A COMPUTER PROGRAM EMPLOYING A SIMPLE CO-ORDINATE SYSTEM,
IN WHICH THE FOLLOWING VARIABLES ARE ENTERED AS DATA:
SUBSTRATE DIMENSIONS AND THERMAL CONDUCTIVITY, POSITIONS OF
HEAT SINKING EDGES, HEAT TRANSFER COEFFICIENT FOR CONVECTION
COOLING, AND POWER, SOURCE STRENGTHS, AND LOCATIONS. THIS
PROGRAM HAS BEEN USED TO PRODUCE THERMAL DESIGN TABLES WHICH
EMPLOY THE SUPERPOSITION THEORY AS PROPOSED AT THE 1973
CANTERBURY CONFERENCE. THESE TABLES ALLOW RAPID DETERMINATION
OF SUBSTRATE TEMPERATURES WITHOUT RECOURSE TO A COMPUTER. THE
LAYOUT OF THE TABLES IS DESCRIBED AND THE DETAILS OF THEIR USE
EXPLAINED. POSSIBLE FUTURE APPLICATIONS OF DESIGN TABLES ARE
ALSO DISCUSSED (5 Refs)

Descriptors: HYBRID INTEGRATED CIRCUITS; COMPUTER-AIDED
DESIGN; ELECTRONICS APPLICATIONS OF COMPUTERS
Identifiers: TEMPERATURE DISTRIBUTIONS; HYBRID MICROELECTRONICS
: COMPUTER PROGRAM; SUBSTRATE TEMPERATURES; MICROELECTRONIC
THERMAL DESIGN TABLES; TWO DIMENSIONAL LAYOUTS
06

Section Class Codes: B2540, C8842
Unified Class Codes: SMEAAB, WMEEAQ

ZABKAR, T.; NAVINSEK, B.
ELEKTROTEH. VESTN. (YUGOSLAVIA) VOL.41, NO.9-10 227-31
SEPT.-OCT. 1974. Coden: ELVEA2
DESCRIBES A DC SPUTTERING DEVICE. OPTIMAL WORKING CONDITIONS
FOR THE DEPOSITION OF THIN FILMS OF VARIOUS METALS AND ALLOYS
PARAMETERS IS GIVEN. ION CURRENT DENSITY, VOLTAGE, AND GAS
PRESSURE, AND THE INFLUENCE OF CATHODE/SUBSTRATE SPACING ON
THE DEPOSITION RATE ARE INVESTIGATED. IT WAS FOUND THAT ABOUT
2 CM BETWEEN CATHODE AND CATHODE IS OPTIMAL UNDER OPTIMAL
WORKING CONDITIONS. DEPOSITION RATE OF 1000 Å/MIN (FOR GOLD)
WAS OBTAINED. PRECISE CONTROL OF ELECTRICAL PARAMETERS
PROVIDES VERY GOOD REPRODUCIBILITY OF SPUTTERED FILMS (9
Refs)
Descriptores: SPUTTERING; VAPOR DEPOSITION; THIN FILM
CIRCUITS; VACUUM TECHNIQUES
Identifiers: DC CATHODE SPUTTERING; DEPOSITION PARAMETERS;
VOLTAGE; GAS PRESSURE; CATHODE/SUBSTRATE SPACING; DEPOSITION
RATE; OPTIMAL WORKING CONDITIONS; REPRODUCIBILITY; THIN FILM
SPUTTERING; ION CURRENT; ION CURRENT DENSITY
02
Section Class Codes: B2524, B1267, A9112, A0634
Unified Class Codes: SMC6AH, ADGKAT, ZG6CAX, BG6EAR
Language: SLOVENE

B20888 A7579544, B7543380
A HYBRID THIN-FILM MULTICHANNEL BIOTELEMETRY TRANSMITTER
FILSHIE, J.H.; MCGEE, I.J.
AGRICULTURAL RES. COUNCIL'S POULTRY RES. CENTRE, EDINBURGH,
SCOTLAND
JERE, INTERNAT. SOC. HYBRID MICROELECTRONICS, IEE, INST.
PHYS., IEE
SIM, 901748 25 B
CONFERENCE ON HYBRID MICROELECTRONICS 49-56 1975
9-11 SEPT. 1975 LOUGHBROUGH, LEICS., ENGLAND
THE REQUIREMENTS OF A MODERN BIOTELEMETRY SYSTEM ARE
DISCUSSED TOGETHER WITH THE PROBLEMS OF MEASURING BIOLOGICAL
PARAMETERS. HYBRID THIN-FILM METHODS PROVIDE A GOOD SOLUTION
TO THE PROBLEM. MULTICHANNEL WITH VME RADIO-TRANSMITTERS FOR
MEASURING TEMPERATURE AND BIOPOTENTIALS HAVE BEEN DESIGNED AND
CONSTRUCTED. A RADIO-FREQUENCY-OPERATED SWITCH IS ALSO
DESCRIBED WHICH ALLOWS IMPLANTED TRANSMITTERS TO BE SWITCHED
REMOTELY (9 Refs)
Descriptores: TELEMETRY EQUIPMENT; BIOLOGICAL TECHNIQUES;
HYBRID INTEGRATED CIRCUITS; THIN FILM CIRCUITS; RADIO TRANSMITTERS;
IDENTIFIERS: HYBRID THIN FILM MULTICHANNEL BIOTELEMETRY
TRANSMITTER; TEMPERATURE MEASUREMENTS; BIOPOTENTIAL
MEASUREMENTS; RADIO FREQUENCY OPERATED SWITCH
06
Section Class Codes: B2524, B3518, A0694, B2540, B2524
Unified Class Codes: BECNAF, BECNAF, BGZKAQ, SMC6AH, SMC6AH

B32459 A7582162, B7541666
STRENGTH OF GOLD-PLATED COPPER LEADS ON THIN FILM CIRCUITS
UNDER ACCELERATED AGING
HALL, P.M.; PANOUSIS, N.T.; MENZEL, P.R.
BELL LABS., ALLENSTOWN, PA, USA
ILEE TRANS. PARTS, HYBRIDS AND PACKAG. (USA) VOL. PHP-11,
NO.3 202-5 SEPT. 1975 Coden: IEPHAA
THE STRENGTHS OF THERMOCOMPRESSION BONDS MADE BETWEEN GOLD
PLATED COPPER LEAD FRAMES AND GOLD METALLIZED THIN FILM
CIRCUITS DECREASE IN TIME WHEN AGED AT 200-300 DEGREES IN AIR
OR VACUUM UNLESS THERE IS A DIFFUSION BARRIER (SUCH AS NICKEL)
BETWEEN THE COPPER AND GOLD. AFTER PULLING BONDS TO
DESTRUCTION, FAILURE MODES AND FAILED SURFACES WERE
CHARACTERIZED BY SCANNING ELECTRON MICROSCOPY, AUGER
SPECTROSCOPY, ELECTRON MICROPROBE, STYLUS PROBE, AND X-RAY
DIFFRACTION. OXIDATION, PORE FORMATION (KIRKENDALL EFFECT),
AND OTHER PHASE FORMATION WERE CONSIDERED AS POSSIBLE
MECHANISMS FOR THE DEGRADATION (9 Refs)
Descriptores: THIN FILM CIRCUITS; ADHESION; WELDING; AGEING
IDENTIFIERS: STRENGTHS; THERMOCOMPRESSION BONDS; GOLD PLATED
COPPER LEAD FRAMES; GOLD METALLIZED THIN FILM CIRCUITS;
FAILURE MODES; FAILED SURFACES; ORDERED PHASE FORMATION;
ACCELERATED AGING; MECHANISM OF FAILURES; EXTRAPOLATION TO
LOWER FAILURES; 200 TO 300 DEGREES C AGING
02
Section Class Codes: B2524, B1267, A9128
Unified Class Codes: SMC6AH, ADGKAT, ZG6KAX

B32459 A7582162, B7541666
STRENGTH OF GOLD-PLATED COPPER LEADS ON THIN FILM CIRCUITS
UNDER ACCELERATED AGING
HALL, P.M.; PANOUSIS, N.T.; MENZEL, P.R.
BELL LABS., ALLENSTOWN, PA, USA
ILEE TRANS. PARTS, HYBRIDS AND PACKAG. (USA) VOL. PHP-11,
NO.3 202-5 SEPT. 1975 Coden: IEPHAA
THE STRENGTHS OF THERMOCOMPRESSION BONDS MADE BETWEEN GOLD
PLATED COPPER LEAD FRAMES AND GOLD METALLIZED THIN FILM
CIRCUITS DECREASE IN TIME WHEN AGED AT 200-300 DEGREES IN AIR
OR VACUUM UNLESS THERE IS A DIFFUSION BARRIER (SUCH AS NICKEL)
BETWEEN THE COPPER AND GOLD. AFTER PULLING BONDS TO
DESTRUCTION, FAILURE MODES AND FAILED SURFACES WERE
CHARACTERIZED BY SCANNING ELECTRON MICROSCOPY, AUGER
SPECTROSCOPY, ELECTRON MICROPROBE, STYLUS PROBE, AND X-RAY
DIFFRACTION. OXIDATION, PORE FORMATION (KIRKENDALL EFFECT),
AND OTHER PHASE FORMATION WERE CONSIDERED AS POSSIBLE
MECHANISMS FOR THE DEGRADATION (9 Refs)
Descriptores: THIN FILM CIRCUITS; ADHESION; WELDING; AGEING
IDENTIFIERS: STRENGTHS; THERMOCOMPRESSION BONDS; GOLD PLATED
COPPER LEAD FRAMES; GOLD METALLIZED THIN FILM CIRCUITS;
FAILURE MODES; FAILED SURFACES; ORDERED PHASE FORMATION;
ACCELERATED AGING; MECHANISM OF FAILURES; EXTRAPOLATION TO
LOWER FAILURES; 200 TO 300 DEGREES C AGING
02
Section Class Codes: B2524, B1267, A9128
Unified Class Codes: SMC6AH, ADGKAT, ZG6KAX

829984 A759535, 87543379
RADIOENERGY OF AVIAN SHANK TEMPERATURE USING A THIN-FILM
MICROCIRCUIT
DUNCAN, I.J.H.; FILSHIE, J.H.; MCGEE, I.J.
AGRICULTURAL RES. COUNCIL'S POULTRY RES. CENTRE, EDINBURGH,
SCOTLAND

MELN. AND BIDAUL. ENG. (GB) VOL.13, NO.4 544-50 JULY 1975

Code: 600

THE SHANK TEMPERATURE OF A BIRD IS ONE INDICATOR OF ITS BEHAVIOURAL STATE. A RADIOELETHRY SYSTEM HAS BEEN DEVELOPED CONSISTING OF A THIN-FILM RADIO-TRANSMITTER AND A DECODING CIRCUIT USING PULSE-RATIO MODULATION OF A SUBCARRIER OSCILLATOR LINEARISED FOR USE WITH A THERMISTOR. THE SUB-AIR FREQUENCY MODULATES A 25-30 MHZ CARRIER OPERATING IN DEAF-FIELD CONDITIONS. THE TRANSMITTER CAN BE USED EXTERNALLY OR MAY BE IMPLANTED. UNDER EXPERIMENTAL CONDITIONS TEMPERATURE DIFFERENCES OF 0.1 DEG. C. TEMPERATURE CHANGES IN RESPONSE TO STRESS SITUATIONS ARE REPORTED AND DISCUSSED (B Ref.)

INTEGRATED CIRCUITS; THIN FILM CIRCUITS; TELEMETERING EQUIPMENT; BIOLOGICAL TECHNIQUES AND INSTRUMENTS. Identifiers: AVIAN SHANK TEMPERATURE; BIRD; BEHAVIOURAL STATE; RADIO-TELEMETRY; RADIO-TRANSMITTER; DECODING CIRCUIT; THIN FILM HYBRID IC.

Section Class Codes: B4260, B3518, B2524, B2540, A0694
Unified Class Codes: BECNAF, FECKAW, SMCEAH, SMEAB, BGZKAO

02075-3 B7543930
A HYBRID MICROCIRCUIT APPROACH TO TELEMETRIC SWALLOWABLE
CAPSULES
LONG, F. M.
ELECTRICAL ENGRG. DEPT., UNIV. OF WYOMING, LARAMIE, WY. USA
PROCEEDINGS OF THE 12TH ANNUAL ROCKY MOUNTAIN BIOMEDICAL
SYMPOSIUM AND THE 12TH INTERNATIONAL ISA BIOMEDICAL SCIENCES
INSTRUMENTATION SYMPOSIUM 61-4 1975
27-30 APRIL 1975 DENVER, COLO., USA

THE DEVELOPMENT OF CHIP COMPONENTS HAS MADE POSSIBLE A REDUCTION IN THE SIZE OF DISCRETE COMPONENT CIRCUITS WITH ONLY A MODERATE INCREASE IN THE COMPLEXITY OF FABRICATION. THE MINIMIST TECHNIQUE IS TO MOUNT THICK FILM RESISTORS AND CAPACITORS TOGETHER WITH SEMICONDUCTOR DEVICES IN THE LID (LEADS), INVERTED DEVICE) PACKAGE AND TO INTERCONNECT THEM BY A MICROPRINTED CIRCUIT SUBSTRATE. A FURTHER DECREASE IN SIZE CAN BE REALIZED IF WIRE BONDING IS USED. WITH THE ADDED ADVANTAGE THAT A WIDER RANGE OF SEMICONDUCTOR DISCRETE DEVICES CAN BE USED, WIRE-BONDED CIRCUITS ARE AVAILABLE. THIN FILM RESISTORS CAN BE USED IN THESE DEVICES, BUT ONLY WHEN OVER 1000 Ω OVER THE

Identifiers: HYBRID MICROCIRCUIT APPROACH: TELEMETRIC SWALLOWABLE CAPSULES: CHIP COMPONENTS: DISCRETE COMPONENT CIRCUITS: THICK FILM RESISTORS; SEMICONDUCTOR DEVICES; MICROPRINTED CIRCUIT SUBSTRATE; WIRE BONDING; THICK FILM CAPACITORS: LEADLESS INVERTED DEVICE PACKAGE; THIN FILM RESISTORS

Section Class Codes: B4640, B3518, B4260
Unified Class Codes: ZRWCAF, FECKAW, BECNAF

827892 B7542567
THIN FILM DIRECTIONAL COUPLER DESIGN. A COMPARISON OF
THEORIES. BALMIDGE, P. L.; ROBERTSON, R. J.
DUNDEE COLLEGE TECHNOL., DEPT. OF ELECTRICAL AND ELECTRONIC
ENGINEERING, DUNDEE SCOTLAND
IEEE. INTERNAT. SOC. HYBRID MICROELECTRONICS, IEEE, INST.
PHYS., IEEE

SUN 0 003748 25 B
CONFERENCE ON HYBRID MICROELECTRONICS 83-94 1975
9-11 SEPT. 1975 LOUGHBOROUGH, LEICS., ENGLAND
THE LONDON, ENGLAND
THE PAPER DESCRIBES THE DESIGN OF 10 DB AND 20 DB
DIRECTIONAL COUPLERS USING TWO DIFFERENT THEORIES. ONE METHOD
USED COMPUTER PROGRAMS TO DETERMINE THE DIMENSIONS AND THE
OTHER USED DESIGN DATA CURVES. THE PERFORMANCE OF THE THICK
FILM COUPLERS IN THE FREQUENCY RANGE 1-2 GHz IS COMPARED AND
VARIOUS IMPROVEMENTS ARE SUGGESTED (12 PpS)
Descriptors: DIRECTIONAL COUPLERS; MICROWAVE INTEGRATED
CIRCUITS; HYBRID INTEGRATED CIRCUITS; THICK FILM CIRCUITS;
MICROWAVE AMPLIFIERS

Identifiers: THICK FILM DIRECTIONAL COUPLER; 1 TO 2 GHz
06
Section Class Codes: B3290, B1820, B2540, B2522
Unified Class Codes: EMWAAM, ETEAAD, SMEAAB, SMCCAX

827560 B7542035
A LINEAR OPTO-ISOLATOR
NORRISON, J.M.; LAW, H.T.
FERRANTI LTD., EDINBURGH, SCOTLAND
IEEE, INTERNAT. SOC. HYBRID MICROELECTRONICS, IEE, INST.
PHYS., IEE

SIN 0 903748 25 B
CONFERENCE ON HYBRID MICROELECTRONICS 117-26 1975
9-11 SEPT. 1975 LOUGHBOROUGH, LEICS., ENGLAND
IEEE LONDON, ENGLAND

THE FABRICATION OF A VERSATILE GENERAL PURPOSE AND LINEAR
OPTO-ISOLATOR IN THIN-FILM HYBRID FORM IS DESCRIBED. IN A
LINEAR INPUT-OUTPUT RELATIONSHIP ONLY OVER A NARROW PORTION OF
THE OPERATING RANGE WITH FEEDBACK TECHNIQUES WHICH ARE MADE
POSSIBLE BY HYBRID MICROCIRCUIT CONSTRUCTION THE INFLUENCE OF
COMPONENT PARAMETERS SPREADS, TEMPERATURE DEPENDENCE AND
TEMPERATURE VARIATIONS IN TRANSFER CHARACTERISTICS CAN BE
MINIMISED. APPLICATIONS FOR SUCH A DEVICE ARE GIVEN.

Descriptores: THIN FILM DEVICES; OPTOELECTRONIC DEVICES;
PHOTOTRANSISTORS; LIGHT EMITTING DIODES; HYBRID INTEGRATED
CIRCUITS

Identificadores: HYBRID MICROCIRCUITS; LINEAR OPTOISOLATOR; THIN
FILM HYBRID FORM; LED PHOTOTRANSISTOR COMBINATION

06
Section Class Codes: B2897, B2895, B2892, B2540, B2524
Unified Class Codes: SHKAAM, SHGAAP, SHCAAJ, SHCAAH, SHCAAH

827332 B7541728
DEGRADATION UNDER THERMAL SOAK OF THE STRENGTH OF ALUMINIUM
WIRE ULTRASONICALLY BONDED TO THICK FILM GOLD (HYBRID IC'S)

LINFORD, P.F.T.; BOBSON, M.
METALL. DIV., AMPE, ALDERMASTON, ENGLAND
IEEE, INTERNAT. SOC. HYBRID MICROELECTRONICS, IEE, INST.
PHYS., IEE

SIN 0 903748 25 B
CONFERENCE ON HYBRID MICROELECTRONICS 247-50 1975
9-11 SEPT. 1975 LOUGHBOROUGH, LEICS., ENGLAND
IEEE LONDON, ENGLAND

THE EFFECT OF THERMAL SOAK AT TEMPERATURES BETWEEN 25
DEGREES C AND 250 DEGREES C FOR 1200 HOURS ON THE BOND STRENGTH
OF 2% NICKEL AL/PERCENT 51 WIPE TO A TRITTED GOLD (ENGLAND
9177), AND A REACTIVELY BONDED GOLD (ENCA 3264) HAS BEEN
INVESTIGATED. BOND STRENGTHS IN BOTH CASES DECREASED AT 150
DEGREES C FOR 100 HOURS THEN MORE OR LESS LEVELLED TO 43PERCENT
OF INITIAL STRENGTH FOR 9177, AND 55PERCENT FOR 3264. AT 250
DEGREES C THERE WAS SOME INCREASE IN STRENGTH PARTICULARLY FOR
9177, AND SOME FLUCTUATION. AT THE INTERMEDIATE TEMPERATURES
BEHAVIOUR WAS BROADLY INTERMEDIATE. AN EXPLANATION OF THE
RESULTS IN TERMS OF DIFFERENTIAL DIFFUSION RATES (KIRKENDALL
EFFECT) AND INTERMETALLIC COMPOUND FORMATION IS PROPOSED (4
REFS)

Descriptores: HYBRID INTEGRATED CIRCUITS; THIN FILM CIRCUITS;
ULTRASONICALLY BONDED; ALUMINIUM; GOLD; THERMAL SOAK

BOND STRENGTH; DIFFERENTIAL DIFFUSION RATES; KIRKENDALL EFFECT
; INTERMETALLIC COMPOUND FORMATION; AL WIRE CONNECTIONS; THICK
FILM AU CONDUCTORS

06
Section Class Codes: B2540, B2522
Unified Class Codes: SHCAAH, SHCAAH

827331 B7541727
A RANGE OF AUTOMATIC FINISHING MACHINES FOR THIN FILM HYBRID
CIRCUITS

YOUNG, G.H.
CIT-ALCATEL, MICROELECTRONICS DIV., MONTROUGE, FRANCE
IEEE, INTERNAT. SOC. HYBRID MICROELECTRONICS, IEE, INST.
PHYS., IEE

SIN 0 903748 25 B
CONFERENCE ON HYBRID MICROELECTRONICS 241-6 1975
9-11 SEPT. 1975 LOUGHBOROUGH, LEICS., ENGLAND
IEEE LONDON, ENGLAND

DEALS WITH A LINE OF MACHINES SPECIFICALLY DESIGNED TO
AUTOMATE AS FAR AS IS PRACTICAL A LARGE IN-HOUSE REQUIREMENT
FOR THIN FILM HYBRID CIRCUITS USED IN THE TELEPHONE INDUSTRY.
HANDLING INNOVATIONS ARE DESCRIBED, AND INDICATIONS ARE GIVEN
OF PRODUCTION RATES AND YIELDS. SOME PROBLEMS ARE DISCUSSED,
AND MENTION IS ALSO MADE OF POSSIBLE FUTURE DEVELOPMENTS TO
EXTEND THE USE OF THE SYSTEM

Descriptores: HYBRID INTEGRATED CIRCUITS; THIN FILM CIRCUITS;
INTEGRATED CIRCUIT PRODUCTION
MACHINES; AUTOMATIC FINISHING MACHINES; THIN FILM HYBRID
CIRCUITS; TELEPHONE INDUSTRY; PRODUCTION RATES

06
Section Class Codes: B2540, B2524
Unified Class Codes: SHCAAH, SHCAAH

1586

827329 87541724
STABILITY AND FORWARD DIODE VOLTAGE CHARACTERISTICS OF
CONDUCTIVE EPOXY RESIN BONDED DEVICES
GENIER, J.
NEWARKET TRANSISTORS LTD., NEWARKET, ENGLAND
PHYS., IEE, INTERNAT. SOC. HYBRID MICROELECTRONICS, IEE, INST.
SYM 0 903748 25 B
CONFERENCE ON HYBRID MICROELECTRONICS 169-79 1975
9-11 SEPT. 1975 LOUGHBOROUGH, LEICS., ENGLAND
THE PRESENT PAPER DESCRIBES THE VARIATIONS IN FORWARD
DIODE VOLTAGE AND CURRENT CARRYING CAPABILITIES OCCURRING WHEN
CONDUCTIVE EPOXY RESINS ARE USED TO BOND TRANSISTOR CHIPS TO
THICK FILM CIRCUITS. IT DEALS MAINLY WITH BACKING MATERIALS
AND EPOXY CURING CYCLES, AND TOUCHES UPON STORAGE PROBLEMS
Descriptons: HYBRID INTEGRATED CIRCUITS; STABILITY
Identifiers: FORWARD DIODE VOLTAGE CHARACTERISTICS;
CONDUCTIVE EPOXY RESIN BONDED DEVICES; CURRENT CARRYING
CAPABILITIES; TRANSISTOR CHIPS; THICK FILM CIRCUITS; STABILITY
ON
Section Class Codes: B2540
Unified Class Codes: SMEAR8

IEEE, INTERNAT. SOC. HYBRID MICROELECTRONICS, IEE, INST.
PHYS., IEE
SYM 0 903748 25 B
CONFERENCE ON HYBRID MICROELECTRONICS 127-30 1975
9-11 SEPT. 1975 LOUGHBOROUGH, LEICS., ENGLAND
THE PRESENT PAPER DESCRIBES THE SUCCESS WITH WHICH THICK
FILM HYBRID TECHNOLOGY HAS BEEN DEVELOPED IN FINLAND AS A
RESULT OF CLOSE CO-OPERATION BETWEEN THE RESEARCH
ESTABLISHMENT AND INDUSTRY. IN PARTICULAR IT DESCRIBES THE
ACTIVE ROLE OF THE UNIVERSITY IN ENCOURAGING INDUSTRY TO MAKE
USE OF THIS TECHNOLOGY IN ITS PRODUCTION (4 Refs)
Descriptons: HYBRID INTEGRATED CIRCUITS; THICK FILM CIRCUITS
; INTEGRATED CIRCUIT PRODUCTION
Identifiers: HYBRID MICROELECTRONICS; FINLAND; THICK FILM
HYBRID TECHNOLOGY
ON
Section Class Codes: B2540, B2522
Unified Class Codes: SMEAR8, SMCCAX

827328 87541722
TECHNOLOGICAL TEACHING OF HYBRID MICROELECTRONICS (THICK
FILM)
LEHOY, Y.; DESCAMPS, M.; VERNET, M.
INST. UNIV. DE TECHNOL., UNIV. DES SCI. ET TECH. DE LILLE,
VILLENEUVE D'ASCQ, FRANCE
IEEE, INTERNAT. SOC. HYBRID MICROELECTRONICS, IEE, INST.
PHYS., IEE
SYM 0 903748 25 B
CONFERENCE ON HYBRID MICROELECTRONICS 131-3 1975
9-11 SEPT. 1975 LOUGHBOROUGH, LEICS., ENGLAND
THE PRESENT PAPER DESCRIBES THE VARIATIONS IN FORWARD
DIODE VOLTAGE AND CURRENT CARRYING CAPABILITIES OCCURRING WHEN
CONDUCTIVE EPOXY RESINS ARE USED TO BOND TRANSISTOR CHIPS TO
THICK FILM CIRCUITS. IT DEALS MAINLY WITH BACKING MATERIALS
AND EPOXY CURING CYCLES, AND TOUCHES UPON STORAGE PROBLEMS
Descriptons: HYBRID INTEGRATED CIRCUITS; STABILITY
Identifiers: FORWARD DIODE VOLTAGE CHARACTERISTICS;
CONDUCTIVE EPOXY RESIN BONDED DEVICES; CURRENT CARRYING
CAPABILITIES; TRANSISTOR CHIPS; THICK FILM CIRCUITS; STABILITY
ON
Section Class Codes: B2540
Unified Class Codes: SMEAR8

827327 87541721
THE HYBRID MICROELECTRONICS EXPLOSION IN FINLAND
JARVINEN, E.
UNIV. OF OULU, OULU, FINLAND

HAVE BEEN TAUGHT IN THE DEPARTMENT OF GENIE ELECTRIQUE (I.U.T.
LILLE) SINCE 1973. THE PURPOSE OF THIS PAPER IS TO REPORT
EXPERIENCE WITH THIS TEACHING AND TO GIVE A FEW DETAILS ABOUT
THE DEVICES WHICH WERE STUDIED AND ACHIEVED BY THE STUDENTS
Descriptons: HYBRID INTEGRATED CIRCUITS; THICK FILM CIRCUITS
; TEACHING
Identifiers: HYBRID MICROELECTRONICS; THICK FILM CIRCUITS
ON
Section Class Codes: B2540, B2522, B1220
Unified Class Codes: SMEAR8, SMCCAX, ADCAAP

DIALOG File13: INSPEC-ELEC & COMPUT 69-77/ISS17 (COPR. I.E.E.) (Item 251 of 388) User 674 28oct77

05
Section Class Codes: B2540, B2522, B2524
Unified Class Codes: SMEAAB, SMCCAX, SMCEAH

B27326 B7541720
COMPARATIVE INVESTIGATION OF THICK FILM AND THIN FILM
COMPONENTS AND MIC'S UP TO 16 GHZ
FURK, W.; SCHILZ, W.
PHILIPS FORSCHUNGS-LAB., HAMBURG GDRH, HAMBURG, GERMANY
IEEE, INTERNAT. SOC. HYBRID MICROELECTRONICS, IEE, INST.
PHYS., IEEE
SMT 0 903748 25 B
CONFERENCE ON HYBRID MICROELECTRONICS 95-100 1975
9-11 SEPT. 1975 LOUGHBOROUGH, LEICS., ENGLAND
LIRE LONDON, ENGLAND

TWO TECHNOLOGIES CAN BE APPLIED FOR THE FABRICATION OF
MICROWAVE INTEGRATED CIRCUITS: THICK FILM AND THIN FILM
TECHNIQUE. WHILE THIN FILM HAS THE ADVANTAGE OF EXCELLENT
ACCURACY OF THE TRANSMISSION LINE WIDTH AND EDGE DEFINITION,
THICK FILM OF THE TECHNIQUE OPENS THE POSSIBILITY OF DIRECT
INTEGRATION OF RESISTORS AND CAPACITORS IN THE SAME
FABRICATION PROCESS. THIS CAN BE A COST REDUCTION FACTOR IN
MASS PRODUCTION. HOWEVER, THE LIMITED ACCURACY OF THICK FILM
LIMITS THE UPPER FREQUENCY OF THE CIRCUIT. THE PURPOSE OF THE
INVESTIGATION REPORTED HERE WAS TO COMPARE THE ELECTRICAL
BEHAVIOUR OF 1. LUMPED ELEMENTS, RESISTORS AND CAPACITORS; 2.
A PASSIVE CIRCUIT, A POWER SPLITTER, BOTH IN THICK FILM AND
THIN FILM, AND 3. TO TEST A MORE COMPLEX THICK FILM DEVICE, A
MW DETECTOR, WHICH INCLUDES PRINTED RESISTORS AND CAPACITORS
(1 refs.)
Descriptors: THIN FILM RESISTORS; THIN FILM CAPACITORS;
THICK FILM RESISTORS; THIN FILM CIRCUITS; THICK FILM CIRCUITS;
HYBRID INTEGRATED CIRCUITS; MICROWAVE INTEGRATED CIRCUITS
Identifiers: THIN FILM COMPONENTS; MIC; 16 GHZ; MICROWAVE
INTEGRATED CIRCUITS; RESISTORS; CAPACITORS; LUMPED ELEMENTS;
PASSIVE CIRCUIT; POWER SPLITTER; MW DETECTOR; THICK FILM
COMPONENTS

06
Section Class Codes: B2540, B2522, B2210, B2670, B2524
Unified Class Codes: SMEAAB, SMCCAX, SEEAAS, SMMAAR, SMCEAH

B27125 B7541719
CONFERENCE ON HYBRID MICROELECTRONICS
IEEE, INTERNAT. SOC. HYBRID MICROELECTRONICS, IEE, INST.
PHYS., IEEE
SMT 0 903748 25 B
1975
9-11 SEPT. 1975 LOUGHBOROUGH, LEICS., ENGLAND
LIRE LONDON, ENGLAND
THE FOLLOWING TOPICS WERE DEALT WITH: NEW MATERIALS AND
TECHNIQUES; EDUCATION AND TRAINING; MANUFACTURING TECHNOLOGY;
RELIABILITY AND TESTING. APPLICATIONS. 30 PAPERS WERE
PRESENTED, OF WHICH 30 ARE PUBLISHED IN FULL IN THE PRESENT
PROCEEDINGS
Descriptors: HYBRID INTEGRATED CIRCUITS; THICK FILM CIRCUITS
IDENTIFIERS: HYBRID CIRCUITS; INTEGRATED CIRCUIT PRODUCTION

B27323 B7541717
EVALUATION OF CONDUCTIVE VIAS FOR HYBRID MICROCIRCUITS
HAMPT, R.E.; NORMOOD, D.P.
REPORT NO.: SAND-74-0047; Issued by: SANDIA CORP.,
ALBUQUERQUE, N.MEX., USA;
Contract No.: AT(29-1)-789

SEPT. 1974
TECHNIQUES AND PROCEDURES WERE DEVELOPED TO PROVIDE
CONDUCTIVE VIAS (OR FEED-THROUGH HOLES) THROUGH THE SUBSTRATE.
TEST SUBSTRATES WERE MADE USING SPUTTERED TANTALUM NITRIDE
RESISTOR FILM ON ONE SIDE AND VACUUM EVAPORATED CR-AU FOR THE
METALLIZATION ON BOTH SIDES AND IN THE HOLES.
PHOTOLITHOGRAPHIC TECHNIQUES WERE DEVELOPED TO PROVIDE
PRODUCTION OF THE GOLD IN THE HOLES DURING THE ETCHING
PROCEDURE. INFORMATION IS PRESENTED ON MEASURED VIA
RESISTANCE, TEMPERATURE CYCLING (1-55 TO 125C), HIGH
TEMPERATURE AGING (150C), CURRENT CARRYING CAPABILITY, THE
EFFECTS OF THE TANTALUM ETCHING ON THE GOLD AS WELL AS FILM
MORPHOLOGY STUDIES. THE RESULTS INDICATE THAT THE TECHNIQUES
AND PROCEDURES PROVIDE CONDUCTIVE VIAS THAT WILL MEET THE
ELECTRICAL AND TEMPERATURE REQUIREMENTS
Descriptors: HYBRID INTEGRATED CIRCUITS; INTEGRATED CIRCUIT
PRODUCTION
Identifiers: CONDUCTIVE VIAS; HYBRID MICROCIRCUITS;
SUBSTRATE; VACUUM EVAPORATED CR-AU; METALLIZATION; ETCHING;
VIA RESISTANCE; TEMPERATURE CYCLING; HIGH TEMPERATURE AGING;
CURRENT CARRYING CAPABILITY; FEED THROUGH HOLES; SPUTTERED TAN
RESISTOR FILM; PHOTOLITHOGRAPHY

11
Section Class Codes: B2540
Unified Class Codes: SMEAAB
Availability: NTIS, SPRINGFIELD, VA. 22161, USA

827322 B7541716
RF HYBRID MICROCIRCUIT SOLDERING TECHNIQUES
OLSON, H.C.; KNAUSS, G.L.
Report No.: SLA-73-1073; Issued by: SANDIA LABS.,
ALBUQUERQUE, N.MEX., USA;
Contract No.: AT(29-1)-789
AUG. 1974
TO MINIMIZE THE INDUCTANCE CAUSED BY FLYING WIRES IT WAS
DESIRABLE TO ATTACH MOST APPLIQUE PARTS TO THE HYBRID CIRCUITS
USING A SOLDER ALLOY. THE HYBRID CIRCUITS HAVE GOLD
METALLIZATION TO WHICH THE APPLIQUE PARTS ARE ATTACHED. THE
SOLDER DEVELOPMENT ACTIVITIES, EQUIPMENT, AND ASSEMBLY
TECHNIQUES USING A 50 WT-PERCENT LEAD-INDIUM SOLDER ALLOY ARE
DESCRIBED.
Descriptors: HYBRID INTEGRATED CIRCUITS; INTEGRATED CIRCUIT
PRODUCTION; SOLDERING; LEAD ALLOYS; INDIUM ALLOYS.
Identifiers: HYBRID MICROCIRCUIT SOLDERING; METALLIZATION;
ASSEMBLY TECHNIQUES; PB-IN SOLDER ALLOY; APPLIQUE PARTS
11
Section Class Codes: B2540, B2560
Unified Class Codes: SWEAAB, SWGAAR
Availability: NTIS, SPRINGFIELD, VA. 22161, USA

827321 B7541715
NEW APPLICATIONS FOR THICK LAYER HYBRID TECHNIQUES
HETHERINGTON, D.R.
NEWARKET TRANSISTORS LTD., NEWMARKET, ENGLAND
RADIO ELEKTRO, SCHAU (AUSTRIA) VOL.51, NO.9 474-6
1975; Order: RELSAK
BEFORE DISCUSSING RESISTANCE PASTES, HYBRID CIRCUIT
CAPACITORS, ACTIVE COMPONENTS, ENCAPSULATION AND THE
APPLICATION OF SUCH CIRCUITS, THE ARTICLE MENTIONS HOW ITS
TECHNIQUE FACILITATES PRODUCTIONS IN DIMENSIONS, LOWER
INDICES, AND CAPACITANCES BETWEEN CIRCUIT COMPONENTS AND A
REDUCED FAILURE RATE THROUGH USING FINE SOLDERED JOINTS, AND
SHOWS THAT A WIDE BAND AMPLIFIER PRODUCED BY THIS TECHNIQUE
WITH A GAIN OF 15 DB OVER A RANGE FROM 40 TO 800 MHZ IS FOUR
TIMES SMALLER AND MUCH LESS COSTLY THAN A SIMILAR UNIT USING
PRINTED CIRCUITS AND DISCRETE COMPONENTS
Descriptors: THICK FILM CIRCUITS; HYBRID INTEGRATED CIRCUITS
; WIDEBAND AMPLIFIERS
Identifiers: APPLICATIONS; RESISTANCE PASTES; CAPACITORS;
ACTIVE COMPONENTS; ENCAPSULATION; WIDE BAND AMPLIFIER; THICK
FILM HYBRID TECHNIQUE
02
Section Class Codes: B2540, B2522, B1840
Unified Class Codes: SWEAAB, SWECAK, ETHAAB
Language: GERMAN

827320 B7541713
A VACUUM CENTRIFUGE FOR VOID-FREE POTTING OF IMPLANTABLE
HYBRID MICROCIRCUITS IN SILICONE

DONALDSON, P.E.K.; SAYER, E.
INST. OF PSYCHIATRY, NEUROLOGICAL PROSTHESIS UNIT, MEDICAL
RES. COUNCIL, LONDON, ENGLAND
MED. AND BIOL. ENG. (GB) VOL.13, NO.4 595-6 JULY 1975
Codon: MBENAU
THE VACUUM CENTRIFUGE HAS BEEN USED FOR POTTING TO A DEPTH
OF 2.5 MM HYBRID THICK-FILM CIRCUITS ON 25 MM*6 MM SUBSTRATES
HAVING PRINTED CONDUCTORS, RESISTORS AND CROSSEVER INSULATION
AND WITH 39 ATTACHED BEAM-LEAD SEALED-JUNCTION TRANSISTORS (3
Refs)
Descriptors: HYBRID INTEGRATED CIRCUITS; ENCAPSULATION;
INTEGRATED CIRCUIT PRODUCTION; CENTRIFUGES;
Identifiers: VACUUM CENTRIFUGE; HYBRID MICROCIRCUITS;
SILICONE RUBBER; VOID-FREE POTTING
02
Section Class Codes: B2540
Unified Class Codes: SWEAAB

827287 B7541670
TRIMMING OF THIN FILM RESISTORS BY SPARK MACHINING
LAM, H.T.
FERRANTI LTD., EDINBURGH, SCOTLAND
IEEE, INTERNAT. SOC. HYBRID MICROELECTRONICS, IEE, INST.
PHYS., IEEE
SON 0 903748 25 8
CONFERENCE ON HYBRID MICROELECTRONICS 181-90 1975
9-11 SEPT. 1975 LOUGHBOROUGH, LEICS., ENGLAND
IEEE LONDON, ENGLAND

SPARK DISCHARGE MACHINING MAY BE USED AS A METHOD OF
ADJUSTING THIN FILM RESISTORS. THE CAPITAL COST OF THE
APPARATUS IS LOW, AND THE METHOD IS FULLY COMPATIBLE WITH
THOSE AUTOMATIC CONTROL PROCEDURES WHICH HAVE COME TO BE
ASSOCIATED WITH RESISTOR TRIMMING IN THE MANUFACTURE OF
THIN-FILM HYBRID MICROCIRCUITS. UNSATISFACTORY RESULTS ARE
OBTAINED WHEN THE SPARK DISCHARGE CIRCUIT SIMILAR TO THAT USED
FOR MANY YEARS IN MACHINING BULK MATERIALS IS APPLIED TO THIN
FILMS. THE CUT LINE IS VARIABLE IN WIDTH AND MAY SHOW
EXTENSIVE MARGINAL DAMAGE. FURTHER DEVELOPMENT OF THE PROCESS
HAS LED TO APPARATUS WHICH ALLOWS TRIMMING OF HIGH VALUE
RESISTORS TO BE READILY ACCOMPLISHED, MAINTAINING CONSISTENT
QUALITY OF THE CUT LINE, AND MINIMUM DAMAGE TO THE IMMEDIATELY
ADJACENT FILM
Descriptors: THIN FILM RESISTORS; INTEGRATED CIRCUIT
PRODUCTION
Identifiers: THIN FILM RESISTORS; RESISTOR TRIMMING; HYBRID
MICROCIRCUITS; SPARK DISCHARGE MACHINING
06
Section Class Codes: B2524, B2210
Unified Class Codes: SWECAH, SEEAAS

Dialog File13: INSPEC-ELEC & COMPUT 69-77/ISS17 (COPR. I.E.E.) (Item 258 of 388) User 674 28oct77

ETCHED: FINE GEOMETRICS: VACUUM DEPOSITED: THIN FILM CONDUCTORS

02
Section Class Codes: B2524
Unified Class Codes: SMCEAH

B72206 B7541669
HIGH FREQUENCY CHARACTERISTICS OF MEANDERING LINE-RESISTORS WITH REGARD TO THE DESIGN OF THIN-FILM CIRCUITS
GROENDIJKER, H.; FECHNER, H.
INST. FÜR NETZWERKTHEORIE UND SCHALTUNGSTECH., TECH. UNIV. MÜNCHEN, MÜNCHEN, GERMANY
IEEE, INTERNAT. SOC. HYBRID MICROELECTRONICS, IEEE, INST. PHYS., IEE

SIN 0 003740 25 B
CONFERENCE ON HYBRID MICROELECTRONICS 63-7 1975
9-11 SEPT. 1975 LOUGHBOROUGH, LEICS., ENGLAND
THE PAPER DESCRIBES THE HIGH FREQUENCY BEHAVIOUR OF MEANDERING LINE-RESISTORS MANUFACTURED IN THIN-FILM TECHNOLOGY. BY MEANS OF A DEVELOPED LUMPED-DISTRIBUTED MODEL THE FREQUENCY CHARACTERISTIC OF SUCH RESISTORS IN AN ARBITRARY RECTANGULAR AREA IS COMPUTED. THE RESULTS, WHICH ARE IN GOOD AGREEMENT WITH THE OUTCOME OF MEASUREMENTS ARE PLOTTED IN DIAGRAMS. FOR A GIVEN POWER REQUIREMENT, RESISTOR AREA, RESISTANCE VALUE AND A REQUIRED LIMITING FREQUENCY ONE CAN GET QUICKLY THE SHAPE OF THE MEANDERING LINES. THE RESISTOR-LINE WIDTH AND THE NUMBER OF SQUARES FOR A RESISTOR, FULFILLING THE REQUIRED FREQUENCY-SPECIFICATION (4 R/Fs)

Descriptiors: THIN FILM RESISTORS; THIN FILM CIRCUITS
Identifiers: HIGH FREQUENCY BEHAVIOUR; MEANDERING LINE RESISTORS; THIN FILM CIRCUITS; LUMPED DISTRIBUTED NETWORK MODEL; RESISTOR LINE WIDTH

05
Section Class Codes: B2524, B2210
Unified Class Codes: SMCEAH, SEEAAS

B72203 B7541665
REACTIVELY BONDED THIN-FILM CONDUCTORS, A NEW COMPONENT FOR COMBINATION THIN- AND THICK-FILM TECHNOLOGY

REISS, S.
GTE SYLVANIA INC., EASTERN DIV., NEEDHAM, MA, USA
IEEE TRANS. PARTS, HYBRIDS AND PACKAG. (USA) VOL. PHP-11, NO.3 190-4 SEPT. 1975 COVER: IERNA
A THIN FILM REACTIVELY BONDED GOLD ALLOY HAS BEEN DEVELOPED. THIS MATERIAL IS SIMILAR IN COMPOSITION AND PHYSICAL PROPERTIES TO THICK-FILM REACTIVELY BONDED GOLDS. IT IS A VACUUM-DEPOSITED MATERIAL THAT IS FIRED IN AIR AT HIGH TEMPERATURES (1000 DEGREES C) TO FORM A STRONG BOND WITH CERAMIC SUBSTRATES. THIN-FILM REACTIVELY BONDED GOLD IS A DENSE, SMOOTH MATERIAL WITH HIGH ELECTRICAL CONDUCTIVITY. THIS ALLOY CAN WITHSTAND REPEATED FIRINGS IN THE 850 TO 1000 DEGREE C TEMPERATURE RANGE AND IS COMPATIBLE WITH MOST THICK-FILM MATERIALS INCLUDING DIELECTRICS, RESISTORS AND CONDUCTORS. IT CAN BE EASILY ETCHED INTO FINE GEOMETRICS (3 R/Fs)

Descriptiors: THIN FILM CIRCUITS; THICK FILM CIRCUITS; SUBSTRATES
Identifiers: REACTIVELY BONDED GOLD ALLOY; HIGH TEMPERATURES; CERAMIC SUBSTRATES; HIGH ELECTRICAL CONDUCTIVITY; EASILY

B72201 B7541662
STATE OF THE ART OF THIN FILM COMPONENTS
HEYKANG, H.; SCHÄGER, A.
SIEMENS AG, UNTERNEHMENSBEREICH DAUELEMENTE, MÜNCHEN, GERMANY
ELECTROCOMPON. SCI. AND TECHNOL. (GB) VOL.2, NO.1 67-6 JUNE 1975 COVER: ECSTCS

THE MAIN REASONS FOR THE DEVELOPMENT OF THIN FILM TECHNOLOGY ARE MINIATURISATION, RELIABILITY AND HIGH FREQUENCY APPLICATIONS. A COMPARISON WITH CONVENTIONAL COMPONENTS, AND WITH THE DEMANDS OF SYSTEM ENGINEERS SHOWS THAT THE THIN FILM RESISTOR PROBLEM IS SOLVED AND THAT THERE ARE THIN FILM CAPACITORS FOR MANY APPLICATIONS, WHEREAS COILS ON ONLY SMALL VALUES AND LOW Q CAN BE MADE, AS THE DISTANCES BETWEEN THIN FILM CIRCUIT ELEMENTS CAN BE EXTREMELY SMALL. THE INHERENT RESISTANCE BETWEEN COMPONENTS IS POSSIBLE. THE INHERENT ADVANTAGES OF THIN FILM TECHNOLOGY ARE GOOD RELIABILITY BECAUSE OF FEWER CONNECTIONS, THE POSSIBILITY OF FUNCTIONAL TAILORING, SMALL TCR AND TCC VARIATION IN A CIRCUIT, AND TCR-TCC BALANCING, FURTHERMORE PARASITIC EFFECTS CAN BE WELL CONTROLLED, DISTRIBUTED ELEMENTS REALIZED AND LARGE SCALE INTEGRATION CARRIED OUT

Descriptiors: THIN FILM CIRCUITS; THIN FILM RESISTORS; THIN FILM CAPACITORS
Identifiers: THIN FILM COMPONENTS; THIN FILM RESISTOR; THIN FILM CAPACITORS; THIN FILM CIRCUIT ELEMENTS; TCR; TCC; LARGE SCALE INTEGRATION

02
Section Class Codes: B2524, B2670, B2210
Unified Class Codes: SMCEAH, SNMAAR, SEEAAS

B27200 B7541661
THIN-FILM TECHNOLOGY ON THE BASIS OF TANTALUM AND TANTALUM
ALUMINIUM
SCHAUER, A.
ELEKTRONIK (GERMANY) VOL.24, NO.9 71-6 SEPT. 1975
Cod'n: ENKAR
DISCUSSES THE MANUFACTURE AND NATURE OF TANTALUM-NITRIDE AND
TANTALUM-OKYNITRIDE RESISTORS, BETA-TANTALUM CAPACITORS AND
THIN-FILM WIRING. THE ADVANTAGES OF THIN-FILM CIRCUITS ARE
POINTED OUT AND TYPICAL APPLICATIONS, SUCH AS 60-MHZ
AMPLIFIER, ACTIVE FILTERS AND TOUCH TONE OSCILLATORS, ARE
BRIEFLY DESCRIBED. FINALLY, THERE IS A REPORT ON THE NATURE OF
THE TANTALUM-ALUMINIUM ALLOYS WITH HIGH ALUMINIUM CONTENT
DISCOVERED IN THE SIEMENS LABORATORIES AND THEIR IMPORTANCE
FOR RC NETWORKS (23 Refs)
Descript'ors: THIN FILM CIRCUITS; THIN FILM CAPACITORS; THIN
FILM RESISTORS
Identifiers: MANUFACTURE; RC NETWORKS; THIN FILM CIRCUITS;
TA THIN FILM CIRCUITS; TA-AL THIN FILM CIRCUITS; THIN FILM
RESISTORS; THIN FILM CAPACITORS; TEMPERATURE COMPENSATION
02
Section Class Codes: B2524, B2670, B2210
Unified Class Codes: SMCEAH, SHMAAR, SEEAAS
Language: GERMAN

B27274 B7541653
AN AIR FIREABLE BASE METAL CONDUCTOR FOR OPTOELECTRONICS
PATTERSON, F.K.; MONES, A.H.; BACHER, R.J.
PHOTO PRODUCTS DEPT., E.I. DU PONT DE NEMOURS AND CO. INC.,
WILMINGTON, DE. USA
IEEE, INTERNAT. SOC. HYBRID MICROELECTRONICS, IEEE, INST.
PHYS., IEE
SDN 0 903748 25 B
CONFERENCE ON HYBRID MICROELECTRONICS 33-41 1975
9-11 SEPT. 1975 LOUGHBOROUGH, LEICS., ENGLAND
TYPE LONDON, ENGLAND
THIS PAPER DESCRIBES THE PHYSICAL AND ELECTRICAL PROPERTIES
OF A UNIQUE SERIES OF THICK FILM NICKEL CONDUCTORS, CAPABLE OF
BEING AIR FIRED WITHOUT DEGENERATIVE ELECTRICAL
CHARACTERISTICS. THESE CONDUCTORS HAVE DIRECT APPLICATION AS
CATHODES FOR ALL GLASS FABRICATED DC PLASMA DISPLAYS. TYPICAL
FABRICATION PROCEDURES OF SUCH PLASMA DISPLAYS WITH THESE
CONDUCTORS AND COMPARISON DIELECTRICS WILL BE PRESENTED. OTHER
POTENTIAL MICROCIRCUIT APPLICATIONS FOR THIS BASE METAL
CONDUCTOR SYSTEM ARE DESCRIBED (2 Refs)
Descript'ors: DISPLAY SYSTEMS; OPTOELECTRONIC DEVICES; THICK
FILM CIRCUITS; CONDUCTORS (ELECTRIC)
Identifiers: OPTOELECTRONICS; CATHODES; GLASS FABRICATED DC
PLASMA DISPLAYS; PLASMA DISPLAYS; MICROCIRCUIT APPLICATIONS;
AIR FIREABLE BASE METAL CONDUCTOR; THICK FILM NI CONDUCTOR
06
Section Class Codes: B2522, B2697, B2404
Unified Class Codes: SMCEAH, SHMAAR, SEEAAS

B27273 B7541652
HIGH TENSILE
METALLIZATIONS
LEMON, T.H.
RES. LABS., JOHNSON, MATTHEY AND CO. LTD., WEMBLEY, ENGLAND
IEEE, INTERNAT. SOC. HYBRID MICROELECTRONICS, IEE, INST.
PHYS., IEE
SDN 0 903748 25 B
CONFERENCE ON HYBRID MICROELECTRONICS 23-32 1975
9-11 SEPT. 1975 LOUGHBOROUGH, LEICS., ENGLAND
TYPE LONDON, ENGLAND
SOLDERED JOINTS BASED UPON CONVENTIONAL AG-PD METALLIZATIONS
RAPIDLY LOSE OVER-ALL TENSILE STRENGTHS WHEN THE BONDS ARE
SUBJECTED TO ELEVATED TEMPERATURES. THIS DEGRADATION IN BOND
STRENGTHS HAS BEEN SUBSTANTIALLY ARRESTED BY SELECTING A GLASS
FOR USE IN THE METALLIZING COMPOSITION WITH A SOFTENING POINT
LYING BETWEEN THE REDUCTION TEMPERATURE OF AG-PD MIXES AND
THE STANDARD PEAK FIRING TEMPERATURE IN THIS WAY IT IS
POSSIBLE TO FORM GLASS-METAL BONDS WHICH ARE SUBJECTED TO THE
MINIMUM OF PHYSICAL DISTURBANCES DURING NORMAL PROCESSING
SCHEDULES. THESE MORE COHERENT LAYERS INHIBIT SURFACE
DIFFUSION OF THE ACTIVE SPECIES THEREBY LIMITING THE RATE AT
WHICH BRITTLE INTERMETALLICS ARE FORMED (10 Refs)
Descript'ors: THICK FILM CIRCUITS; HYBRID INTEGRATED CIRCUITS
; INTEGRATED CIRCUIT PRODUCTION; METALLISATION
Identifiers: AG-PD METALLIZATIONS; TENSILE STRENGTHS; BOND
STRENGTHS; GLASS; REDUCTION TEMPERATURE; PEAK FIRING
TEMPERATURE; GLASS METAL BONDS
06
Section Class Codes: B2522, B2540
Unified Class Codes: SMCCAX, SMEAAB

DIAGLOG File13: INSPEC-ELEC & COMPUT 69-77/ISS17 (COPR. I.E.E.) (Item 264 of 388) User 674 28oct77

THICK FILM MICROCIRCUITS: GAS ADSORPTION; STRUCTURE; SCANNING ELECTRON MICROSCOPE; CHEMICAL COMPOSITION; ATOMIC ABSORPTION SPECTROSCOPY; CONDUCTOR GLAZE PENETRATION; HYBRID MICROCIRCUITS

06
Section Class Codes: B2522, B2540
Unified Class Codes: SMCCAX, SMEAAB

B27270 B7541649
CONDUCTION MECHANISMS IN THICK FILM MICROCIRCUITS

VEST, R.W.
Report No.: UNNUMBERED; Issued by: PURDUE RES. FOUND..
LAFAYETTE, IND., USA;
31 DEC. 1974

THE SINTERING KINETICS AND THE RIPENING KINETICS FOR RUO/SUB 2/ PARTICLES IN THE PRESENCE OF A GLASS PHASE WERE STUDIED BY MEASURING SURFACE AREA, X-RAY LINE BROADENING, SHRINKAGE, AND ELECTRICAL RESISTANCE. RESULTS FROM THESE FOUR TECHNIQUES ARE INTERPRETED IN TERMS OF COMPETING PROCESSES WHICH OCCUR DURING THICK FILM RESISTOR FIRING. THE SHEET RESISTANCE OF THICK FILM RESISTORS AS A FUNCTION OF RUO/SUB 2/GLASS RATIO IS REPORTED

Descriptors: THICK FILM RESISTORS; THICK FILM CIRCUITS
Identifiers: THICK FILM MICROCIRCUITS; SINTERING KINETICS; RIPENING KINETICS; RUO/SUB 2/; X-RAY LINE BROADENING; SHRINKAGE; ELECTRICAL RESISTANCE; THICK FILM RESISTOR FIRING

11
Section Class Codes: B2522, B2210
Unified Class Codes: SMCCAX, SEEAAS
Availability: NTIS, SPRINGFIELD, VA. 22161, USA

B27272 B7541651
SUBSTRATE BOWING IN THICK FILM MULTILAYERED CIRCUITS

SAVAGE, J.; DAVEY, N.
METALL. DIV., AMRE, ALDERMASTON, ENGLAND
IEEE, INTERNAT. SOC. HYBRID MICROELECTRONICS, IEE, INST. PHYS., IEE

SUPP. 0 903748 25 B
CONFERENCE ON HYBRID MICROELECTRONICS 17-22 1975
9-11 SEPT. 1975 LOUGHBOROUGH, LEICS., ENGLAND

THIS PAPER DESCRIBES THE DISTORTION OF ALUMINA SUBSTRATES WHICH OCCURS DURING THICK FILM MULTILAYERED CIRCUIT FABRICATION AND COMPARES THE EFFECT OF A RANGE OF COMMERCIAL INSULANT MATERIALS. THE DISTORTION IS SHOWN, BY DILATOMETRY AND DIRECT OBSERVATION, TO BE DUE TO THERMAL EXPANSION MISMATCH BETWEEN THE INSULANT AND THE ALUMINA. THE PROGRESS OF BOWING DURING HEATING AND COOLING CYCLES IS DEMONSTRATED. AN ESTIMATE IS MADE OF THE STRESS LEVELS IN THE INSULANTS AND THE POSSIBLE EFFECT OF THESE STRESSES ON THE RELIABILITY OF THE CIRCUIT ARRAY IS CONSIDERED

Descriptors: THICK FILM CIRCUITS; INTEGRATED CIRCUIT PRODUCTION; SUBSTRATES
Identifiers: BOWING; THICK FILM MULTILAYERED CIRCUITS; DISTORTION; ALUMINA SUBSTRATES; THERMAL EXPANSION MISMATCH; STRESS LEVELS; INSULANTS; RELIABILITY

06
Section Class Codes: B2522
Unified Class Codes: SMCCAX

B27271 B7541650
SURFACE AREA, STRUCTURE AND COMPOSITION OF DEBASED ALUMINA SUBSTRATES

GILFILLAN, M.V.; GURNETT, G.E.
STANDARD TELECOMMUNICATION LABS. LTD., HARLOW, ENGLAND
IEEE, INTERNAT. SOC. HYBRID MICROELECTRONICS, IEE, INST. PHYS., IEE

SUPP. 0 903748 25 B
CONFERENCE ON HYBRID MICROELECTRONICS 1-16 1975
9-11 SEPT 1975 LOUGHBOROUGH, LEICS., ENGLAND

THE SURFACE AREAS OF A NUMBER OF COMMERCIAL ALUMINA SUBSTRATES USED FOR THICK FILM MICROCIRCUITS HAVE BEEN DETERMINED USING THE BRUNNER, EMMETT AND TELLER (B.E.T.) METHOD OF GAS ADSORPTION. THE DETAILED STRUCTURE OF THE SURFACES AND OF FRACTURED CROSS-SECTIONS OF SUBSTRATES WERE EXAMINED ON A SCANNING ELECTRON MICROSCOPE (SEM), AND THEIR CHEMICAL COMPOSITION DETERMINED BY ATOMIC ABSORPTION SPECTROSCOPY. CONDUCTOR GLAZE PENETRATION AND POSSIBLE RUN-OUT IS SHOWN TO BE RELATED TO BOTH SUBSTRATE COMPOSITION AND MICROSTRUCTURE. RESISTOR CHARACTERISTICS ARE SHOWN TO DEPEND ON THE POROSITY OF THE SUBSTRATE (6 PAGES)

Descriptors: ALUMINA SUBSTRATES; HYBRID INTEGRATED CIRCUITS; THICK FILM MICROCIRCUITS

827117 B7541392, C752548
TOLERANCE ANALYSIS OF SUPERCONDUCTING CIRCUITS
KITSCHKE, P.
SEKTION INFORMATIONSTECHNIK UND THEORETISCHE ELEKTROTECHNIK,
TH. ILSENHAU, GERMANY
MUS, Z., TECH. HOCHSCH.
91-100, 1975
CODING: WZTHAP
DISCUSSES TECHNIQUES OF NUMERICAL TOLERANCE ANALYSIS OF
THICK FILM CIRCUITS. TAKING INTO ACCOUNT INFLUENCE ON PERFORMANCE
DUE TO TOLERANCES IN MECHANICAL DIMENSIONS, DUE TO VARIATIONS
OF WORKING TEMPERATURES AND DUE TO CHANGES IN DYNAMIC LOADING.
SOME RESULTS ON TRANSIENT PERFORMANCE OF CRYOTRON NETWORKS ARE
SHOWN. (11 Refs)
Descriptors: COMPUTER-AIDED CIRCUIT ANALYSIS; SUPERCONDUCTI-
NG DEVICES; CRYOTRONS; THIN FILM CIRCUITS
Identifiers: SUPERCONDUCTING CIRCUITS; NUMERICAL TOLERANCE
ANALYSIS; VARIATIONS OF WORKING TEMPERATURES; DYNAMIC LOADING;
TRANSIENT PERFORMANCE; CRYOTRON NETWORKS
02
Section Class Codes: C0842, B2340, B1020
Unified Class Codes: W0000, S0000, E0000
Language: GERMAN

826777 B7541225
A SIMPLE HYBRID THICK FILM BAND PASS FILTER
RAY, D.P.
RAE, LARNBOROUGH, ENGLAND
IEEE, INTERNAT. SOC. HYBRID MICROELECTRONICS, IEE, INST.
PHYS., IEE
SDN 0 003748 25 B
CONFERENCE ON HYBRID MICROELECTRONICS 43-8 1975
9-11 SEPT. 1975 LOUGHBOROUGH, LEICS., ENGLAND
IEEE LONDON, ENGLAND
IT IS SHOWN THAT INDUCTORS CAN BE REPLACED BY A VERY SIMPLE
FORM OF GYRATOR FOR FILTERS DEMANDING ONLY MODERATE VALUES OF
Q, GIVING A SAVING IN SPACE AND COST. A PARTICULAR FILTER IS
DESCRIBED WHICH IS OVER AN ORDER OF MAGNITUDE SMALLER THAN AN
LCR EQUIVALENT. (4 Refs)
Descriptors: BAND-PASS FILTERS; HYBRID INTEGRATED CIRCUITS;
THICK FILM CIRCUITS
Identifiers: HYBRID THICK FILM BAND PASS FILTER; GYRATOR
06
Section Class Codes: B1800, B2522, B2540
Unified Class Codes: ETRAAM, SWCCAX, SWEAAB

826964 B7541204
DESIGN OF ACTIVE FILTERS USING DOUBLE LAYER RC DISTRIBUTED
LINES
MILLARANTAN, W.N.
DEPT. OF ELECTRICAL ENGRG., CALICUT REGIONAL ENGRG. COLL.,
KALAMANGALAM, INDIA

SEPT. 1975 Coden: ICTACV
APPLICATION OF DOUBLE LAYER RC DISTRIBUTED LINES IN THE
DESIGN OF LOW-PASS, BAND-PASS, AND HIGH-PASS FILTERS IS
CONSIDERED IN THIS COMMUNICATION. REALIZATION OF THESE FILTERS
EMPLOYING TWO DOUBLE LAYER LINES AND A DIFFERENCE AMPLIFIER
USING DOMINANT ROOT APPROACH IS ALSO PRESENTED. (5 Refs)
Descriptors: ACTIVE FILTERS; DISTRIBUTED PARAMETER NETWORKS;
LINEAR NETWORK SYNTHESIS; THIN FILM CIRCUITS
Identifiers: ACTIVE FILTERS; DOUBLE LAYER; RC DISTRIBUTED
LINES; DIFFERENCE AMPLIFIER; DOMINANT ROOT; LOW PASS; BAND
PASS; HIGH PASS; INTEGRATED CIRCUIT; THIN FILM CIRCUIT;
RESISTIVE SHEETS; DIELECTRIC SHEETS
02

Section Class Codes: B1800, B1650, B1620, B2524
Unified Class Codes: ETRAAM, ERMAAH, EREAAE, SWEAAB

B26802 B7541093
A FAST THICK FILM AMPLIFIER
ROBERTSON, J.; ANDERSON, B.
ELECTRICAL ENGRG. DEPT., EDINBURGH UNIV., EDINBURGH,
SCOTLAND
IEEE, INTERNAT. SOC. HYBRID MICROELECTRONICS, IEE, INST.
PHYS., IEE
SDN 0 003748 25 B
CONFERENCE ON HYBRID MICROELECTRONICS 77-82 1975
9-11 SEPT. 1975 LOUGHBOROUGH, LEICS., ENGLAND
IEEE LONDON, ENGLAND
DESCRIBES A THICK FILM HYBRID PREAMPLIFIER. THE PREAMPLIFIER
FUNCTIONED AS AN AMPLIFIER WITH A 50 OHM INPUT IMPEDANCE
BETWEEN A PHOTOMULTIPLIER TUBE AND A DISCRIMINATOR STAGE. IT
WAS DESIGNED TO PROVIDE A GAIN OF 4 WITH A RISE TIME <1 NS.
SMALL SIZE WAS DICTATED BY TRANSIT TIME AND CAPACITANCE
CONSIDERATIONS, BUT ALSO BY THE REQUIREMENT TO STACK 8
PREAMPLIFIER CIRCUITS VERTICALLY WITHIN A 1.35SECONDS (34.3
MM) WIDE NIM5 MODULE
Descriptors: HYBRID INTEGRATED CIRCUITS; THICK FILM CIRCUITS
Identifiers: FAST THICK FILM AMPLIFIER; HYBRID PREAMPLIFIER;
INPUT IMPEDANCE; PHOTOMULTIPLIER TUBE; DISCRIMINATOR STAGE;
GAIN; RISE TIME; CAPACITANCE CONSIDERATIONS; TRANSIT TIME
CONSIDERATIONS
06

Section Class Codes: B1840, B2522, B2540
Unified Class Codes: ETRAAB, SWCCAX, SWEAAB

826091 B7541092
A THICK FILM WIDE BAND AMPLIFIER
HEATHERINGTON, D.B.
NEWMARKET TRANSISTORS LTD., NEWMARKET, ENGLAND
IEEE, INTERNAT. SOC. HYBRID MICROELECTRONICS, 1EE, INST.
PHYS., IEEE
SUM O '03748 25 0
CONFERENCE ON HYBRID MICROELECTRONICS 60-76 1975
9-11 SEPT. 1975 LOUGHBOUGH, LEICS., ENGLAND
THE PAPER DESCRIBES THE CONVERSION FROM PRINTED CIRCUIT TO
THICK FILM HYBRID CIRCUIT TECHNOLOGY OF A WIDE BAND AMPLIFIER
USED IN THE INPUT OF A VIDEO TAPE RECORDER. THE THICK FILM
SPECIFICATION IS 14 DB GAIN FROM 40 TO 800 MHZ. THE THICK FILM
LAYOUT IS DESCRIBED IN DETAIL AND THE PERFORMANCE DIFFERENCES
BETWEEN PLASTIC '1' PACK ACTIVE DEVICES AND NAKED CHIP EPOXY
BONDED DEVICES ARE SHOWN

Descriptors: WIDEBAND AMPLIFIERS; THICK FILM CIRCUITS;
HYBRID INTEGRATED CIRCUITS
Identifiers: THICK FILM WIDE BAND AMPLIFIER; THICK FILM
HYBRID CIRCUIT TECHNOLOGY; VIDEO TAPE RECORDER; 14 DB GAIN; 40
TO 800 MHZ; PLASTIC '1' PACK ACTIVE DEVICES; NAKED CHIP EPOXY
BONDED DEVICES
06
Section Class Codes: B1840, B2522, B2540
Unified Class Codes: ETHAB, SWCCAX, SMEAB

826011 B7540994
1 MHZ TO 1.5 GHZ THIN-FILM AMPLIFIER FEATURES THREE STAGES
IN A 10-3 CAN
HOBBS, G.
AVANTEK INC., SANTA CLARA, CA. USA
MICROWAVE SYST. NEWS (USA) VOL.5, NO.3 46-7 JUNE-JULY
1975 COPEN: MMSN9
BY EXTENDING THE CONCEPT OF THIN-FILM WIDEBAND AMPLIFIERS TO
INCLUDE MULTIPLE STAGES, THIS NEW UNIT OFFERS GAIN,
PERFORMANCE AND COST BENEFITS
Descriptors: MICROWAVE AMPLIFIERS; THIN FILM CIRCUITS;
SOLID-STATE MICROWAVE CIRCUITS; MICROWAVE INTEGRATED CIRCUITS;
HYBRID INTEGRATED CIRCUITS
Identifiers: AMPLIFIER 1 MHZ TO 1.5 GHZ; THIN FILM; THREE
STAGE; SINGLE SUBSTRATE; MODULAR; STABILITY; COST BENEFIT
02
Section Class Codes: B1820, B2540, B2524, B1840
Unified Class Codes: ETEAD, SMEAB, SMEAH, ETHAB

818972 B7539001
THICK-FILM TECHNOLOGY APPLIED IN POWER CIRCUITS-13 W
AMPLIFIER
1975
1-15

DESCRIBES ACOUSTIC 13 W POWER AMPLIFIER BASED ON THICK-FILM
TECHNOLOGY USING NON-ENCAPSULATED MEDIUM AND HIGH POWER
SEMICONDUCTORS. THE AMPLIFIER MAY BE USED IN CONSUMER PRODUCTS
(HIGH STANDARD RADIO EQUIPMENT, ELECTROACOUSTIC DEVICES, ETC.)
Descriptors: THICK FILM CIRCUITS; POWER AMPLIFIERS; RADIO
RECEIVERS; AUDIO-FREQUENCY AMPLIFIERS
Identifiers: HIGH POWER SEMICONDUCTORS; HIGH STANDARD RADIO
EQUIPMENT; THICK FILM TECHNOLOGY; ACOUSTIC 13 W POWER
AMPLIFIER; NON ENCAPSULATED MEDIUM; ELECTROACOUSTIC DEVICES
02
Section Class Codes: B3780, B1840, B3740, B2522
Unified Class Codes: FRAAF, ETHAB, FGAAM, SWCCAX
Language: POLISH

B17706 B7537697
EARLY PRODUCTION HISTORY ON HYBRID MICROCIRCUITS CONTAINING
BEAM-LEAD SEMICONDUCTORS
WILEY, T.A.
Report No.: 80X-613-1116-REV: Issued by: BENDIX CORP.,
KANSAS CITY, MO., USA;
Contract No.: AT(29-1)-613
AUG. 1974

DATA FROM HYBRID MICROCIRCUIT PROTOTYPE DEVELOPMENT AND
EARLY CODED ELECTRONIC-SWITCH PRODUCTION REVEALED THAT THE
BEAM-LEAD DEVICES ARE MORE RELIABLE THAN THE CHIP-AND-WIRE
ACTIVE DEVICES USED IN PREVIOUS APPLICATIONS. YIELDS AT THE
VARIOUS PROCESSING LEVELS WERE BETTER THAN EXPECTED, AND THE
OVER-ALL MICROCIRCUIT YIELD WAS MORE THAN 50 PERCENT, BECAUSE
OF STRINGENT QUALITY REQUIREMENTS THIS YIELD IS CONSIDERED
ACCEPTABLE, BUT IS IMPROVING WITH CUMULATIVE PRODUCTION
EXPERIENCE. SEVEN TYPES OF MICROCIRCUITS FOR THE CODED SWITCH
ARE NOW MANUFACTURED ON A SCHEDULED BASIS, AND CURRENT
PROBLEMS ARE NOT SUFFICIENT TO AFFECT PRODUCTION SCHEDULES
Descriptors: INTEGRATED CIRCUIT PRODUCTION; CIRCUIT
RELIABILITY; BEAM-LEAD DEVICES; HYBRID INTEGRATED CIRCUITS;
SEMICONDUCTOR SWITCHES
Identifiers: HYBRID MICROCIRCUIT; MICROCIRCUIT YIELD;
QUALITY REQUIREMENTS; PRODUCTION EXPERIENCE; CODED SWITCH;
BEAM LEAD DEVICES; RELIABILITY
11
Section Class Codes: B2540, B1263
Unified Class Codes: SMEAD, AGDAL
Availability: NTIS, SPRINGFIELD, VA. 2161, USA

02

817782 87537693
A PHOTORESIST-CHARACTERIZATION APPROACH TO HYBRID-MICROCIRCUIT
UNIT DIMENSIONAL CONTROL
SCHMITZ, L.E.
MICROELECTRONICS (GB) VOL.5, NO.4 25-31 1974 Codon:
BENDIX CORP., KANSAS CITY, MO, USA

TO MEET THE CRITICAL ELECTRICAL PARAMETERS OF UNTRIMMED
HYBRID MICROCIRCUIT NETWORKS WITHIN REQUIRED TOLERANCES, THE
DIMENSIONAL INTEGRITY OF THE CIRCUIT PATTERN MUST BE CAREFULLY
MAINTAINED DURING PROCESSING. THIS CAN BE ACCOMPLISHED BY
MANIPULATING FIVE PHOTOLITHOGRAPHIC PROCESSING PARAMETERS:
EXPOSURE, ENERGY, PHOTORESIST DEVELOPMENT TIME AND SOLUTION
CONCENTRATION, PHOTORESIST THICKNESS, UNIFORMITY, DEGREE OF
ETCHANT UNDERCUTTING, AND THE PREBAKE TIME-TEMPERATURE
PRODUCT. BY ADJUSTING THE RELATIVE DOMINANCE OF THESE
PARAMETERS AND BY OPTIMIZING THE VALUE OF EACH, IT IS POSSIBLE
TO RUNNER OVERALL PATTERN DIMENSIONS RELATIVELY INSENSITIVE TO
NORMAL PROCESS VARIATIONS. THIS ARTICLE DESCRIBES PROCESS
CHARACTERIZATION AND CONTROL TECHNIQUES BY WHICH THE
DIMENSIONAL INTEGRITY OF LINE WIDTHING AS NARROW AS 5.0 MILS
(127 MICRONS) CAN BE MAINTAINED TO WITHIN +0.8-1 PER CENT
(16 MILS).

DESCRIPTORS: HYBRID INTEGRATED CIRCUITS; THIN FILM CIRCUITS;
PHOTORESIST; PHOTOLITHOGRAPHY
IDENTIFIERS: HYBRID MICROCIRCUIT; PHOTOLITHOGRAPHIC;
EXPOSURE; ENERGY; PHOTORESIST DEVELOPMENT TIME; SOLUTION
CONCENTRATION; ETCHANT; PROCESS CHARACTERIZATION

02

Section Class Codes: B2540, B2524
Unified Class Codes: SMEAAB, SMCEAH

817781 87537692

THIN LINE SCREEN PRINTING YIELDS AS A FUNCTION OF PHYSICAL
DESIGN PARAMETERS
WHESTER, R.
HYPERWELL INFORMATION SYSTEMS, BILLERICA, MA, USA
IEEE TRANS. MANUF. TECHNOL. (USA) VOL. MFT-4, NO.1 14-20

THE CURRENT DESIGN TREND IN THICK FILM HYBRIDS IS TOWARD
LARGER SUBSTRATE SIZE AND NARROWER CONDUCTOR LINES. THIS PAPER
DOCUMENTS THE RESULTS OF A STUDY UNDERTAKEN TO DETERMINE THE
EFFECT OF LINE WIDTH AND SPACING, SUBSTRATE SIZE, AND
CONDUCTOR LENGTH ON THE OCCURRENCE OF COMMON SCREEN PRINTING
DEFECTS. DEVELOPMENT OF A SCREEN PRINTING TEST PATTERN AND A
DATA REDUCTION SOFTWARE ROUTINE IS ALSO DESCRIBED.
RECOMMENDATIONS FOR SELECTION OF LINE WIDTH/SPACING AND
SUBSTRATE SIZE ARE PRESENTED
DESCRIPTORS: HYBRID INTEGRATED CIRCUITS
IDENTIFIERS: HYBRID INTEGRATED CIRCUITS
THIN FILM HYBRID; DESIGN; LINE WIDTH; SPACING; SUBSTRATE SIZE;

02

Section Class Codes: B2540, B2522
Unified Class Codes: SMEAAB, SMCCAX

817780 87537691
SEMICONDUCTOR CHIP ATTACHMENT WITH SMALL BUMP FLIP CHIPS
WATTE, G.C.
HYPERWELL INFORMATION SYSTEMS, BILLERICA, MA, USA
IEEE TRANS. MANUF. TECHNOL. (USA) VOL. MFT-4, NO.1 8-13

IT HAS BEEN REPORTED ELSEWHERE THAT THE RATIO OF THE
DIAMETER TO THE HEIGHT OF A REFLOW SOLDERED FLIP-CHIP PAD
SHOULD BE LESS THAN 2:1. THIS GEOMETRY PERMITS A DUCTILE
MATERIAL TO ACCEPT THE STRAIN CAUSED BY DIFFERENCES IN THERMAL
EXPANSION COEFFICIENTS OF SILICON AND ALUMINA. HOWEVER, TO
DEPOSIT SUFFICIENT MATERIAL ON A SEMICONDUCTOR CHIP TO ACHIEVE
THIS GEOMETRY HAS USUALLY MEANT CHIP PAD REDUCTION AND THE
RESULTING COSTLY MASK CHANGES. THIS PAPER DESCRIBES METHODS OF
DEPOSITING SUFFICIENT MATERIAL ON A THICK FILM SUBSTRATE TO
PERMIT USE OF CHIPS WITH REDUCED BUMP VOLUME. DETAILS IN THE
PAPER DESCRIBE THE VOLUME CALCULATIONS AND ANTIWORK DESIGN FOR
DEPOSITION OF SOLDER CRENE BY SCREEN PRINTING. SELECTION AND
DEPOSITION OF A DIELECTRIC GLAZE MATERIAL TO LIMIT THE AREA OF
SOLDER WETTING ON THE SUBSTRATE PADS IS ALSO DESCRIBED. THE
TEST VEHICLE USED IN THE STUDY IS A SIMPLE 2-BIT COUNTER
UTILIZING LAMECL GATES. IT WAS FABRICATED IN MULTILAYER FORMAT
FOR COMPARISON OF OPERATING PARAMETERS BETWEEN EUTECTIC BACK
BONDED AND SOLDER REFLOW FACE BONDED CHIPS (5 REFS)

DESCRIPTORS: INTEGRATED CIRCUIT PRODUCTION; THICK FILM
CIRCUITS; HYBRID INTEGRATED CIRCUITS
IDENTIFIERS: SMALL BUMP FLIP CHIPS; THICK FILM SUBSTRATE;
VOLUME CALCULATIONS; ANTIWORK DESIGN; DEPOSITION; SOLDER CREME;
SCREEN PRINTING; DIELECTRIC GLAZE MATERIAL; SEMICONDUCTOR CHIP
ATTACHMENT; HYBRID INTEGRATED CIRCUIT MANUFACTURE

02

Section Class Codes: B2540, B2522
Unified Class Codes: SMEAAB, SMCCAX

817718 B7537604
DESTRUCTABLE MICROELECTRIC CIRCUIT ELEMENT
KAPP, E.J.
Patent No.: USA 3875431 Assignees: US NAVY Filed: 16 OCT. 1970
1 APRIL 1975
THE DISCLOSURE COMPRISES A THIN FILM CIRCUIT SUBSTRATE OF CERAMIC MATERIAL; A FILM CONDUCTOR OF AN EXOTHERMIC MIXTURE OF ALUMINIUM-PALLADIUM EVAPORATED ON THE SUBSTRATE TO UNDERLIE A THIN FILM CIRCUIT AT STRATEGIC PLACES OF DESTRUCTION; A THIN FILM OF SILICON MONOXIDE OVERLYING THE FILM CONDUCTOR; A THIN FILM CIRCUIT DEPOSITED OVER THE SILICON MONOXIDE FILM WITH STRATEGIC PORTIONS OVERLYING THE CONDUCTING FILM, AND A SWITCHED PULSING CIRCUIT WHEREBY THE PULSES ENERGIZE THE CONDUCTING FILM TO PRODUCE EXOTHERMIC REACTION TO DESTROY THE THIN FILM CIRCUIT AT STRATEGIC PLACES
Descriptores: THIN FILM CIRCUITS
Identifiers: THIN FILM CIRCUIT SUBSTRATE; FILM CONDUCTOR; SILICON MONOXIDE; SWITCHED PULSING CIRCUIT; EXOTHERMIC REACTION; SELFDESTRUCTIVE THIN FILM CIRCUIT
OH
Section Class Codes: B2524
Unified Class Codes: SMCEAH

817716 B7537602
PROCESS FOR MANUFACTURING A CONDUCTIVE FILM FOR A THIN FILM INTEGRATED CIRCUIT DEVICE
SATO, A.; SATO, S.
Patent No.: USA 3869367 Assignees: NIPPON ELECTRIC CO.
LTD Filed: 3 JAN. 1973
Original Patent Appl. No.: JAPAN 47-130072
Priority Date: 27 DEC 1972
4 MARCH 1975
THE PROCESS CONSISTS IN FORMING A FILM OF A FIRST HIGH-CONDUCTIVITY METAL ON AN INSULATOR BASE PLATE; FORMING A DIFFUSION PREVENTING INSULATOR FILM ON THE METAL; AND SPUTTERING A SECOND METAL SUSCEPTIBLE TO ANODIC FILM FORMING OPERATION ONTO THE INSULATOR FILM, WHICH IS OF SUCH THICKNESS AS TO PLUG PARTICLES OF THE SECOND METAL TO PENETRATE AT A MULTIPLICITY OF LOCATIONS, WHILE LEAVING INTACT A SUFFICIENT INSULATING FILM SUBSTANTIALLY TO PREVENT THE FORMATION OF AN ALLOY OF THE FIRST AND SECOND METALS, WHEREBY A COMPOSITE FILM IS PRODUCED HAVING A SPECIFIC CONDUCTIVITY HIGHER THAN THAT OF EITHER METAL
Descriptores: INTEGRATED CIRCUIT PRODUCTION; THIN FILM CIRCUITS; SPUTTERING
Identifiers: CONDUCTIVE FILM; THIN FILM INTEGRATED CIRCUIT; INSULATOR BASE PLATE; DIFFUSION PREVENTING INSULATOR FILM; SPUTTERING; COMPOSITE FILM; SPECIFIC CONDUCTIVITY
OH
Section Class Codes: B2524
Unified Class Codes: SMCEAH

817715 B7537601
PROCESS OF PRODUCING A THIN FILM CIRCUIT
SUMI, N.
Patent No.: USA 3867193 Assignees: IWATSU ELECTRIC CO.
LTD Filed: 5 NOV. 1971
Original Patent Appl. No.: JAPAN 45-19262
Priority Date: 28 DEC 1970
18 FEB. 1975
THE PROCESS INVOLVES APPLICATION OF AN ANTI-OXIDATION MASK TO A CONDUCTIVE FILM AND ANODISING THE UPPER SURFACE OF THE UNOXIDIZED FILM AS A BASE FOR DEPOSITION OF A METAL PATTERN FORMING A THIN FILM CAPACITOR
Descriptores: THIN FILM CAPACITORS; THIN FILM CIRCUITS
Identifiers: THIN FILM CIRCUIT; ANTI-OXIDATION MASK; CONDUCTIVE FILM; ANODISING; METAL PATTERN; THIN FILM CAPACITOR
OH
Section Class Codes: B2524, B2670
Unified Class Codes: SMCEAH, SNMAAR

817713 A7567589, B7537599
X-RAY DIFFRACTION STRESS MEASUREMENTS IN THIN FILMS (ON SUBSTRATES)
LOUZHON, T.-J.; SPENCER, T.H.
WESTERN ELECTRIC CO., HAMTHORNE STATION, CHICAGO, IL, USA
SOLID STATE TECHNOL. (USA) VOL.18, NO.7 25-B JULY 1975
Describes an accurate, labor saving method requiring no special diffraction attachments for thin film circuits. Improved results were obtained by the introduction of a calibration standard. The use of this standard angular measurements of ± 0.005 degrees were attained. The technique consists of scanning a thin gold film sample and a diamond standard simultaneously. This is accomplished by applying fine diamond particles on the surface of the gold film prior to x-ray scanning. Accuracy has been further aided in the subsequent mathematical operations used to obtain a stress value. A precise parameter measurement is obtained on which the stress calculations are made (B Refs)
Descriptores: X-RAY DIFFRACTION EXAMINATION OF MATERIALS; STRESS MEASUREMENT; METALLIC THIN FILMS; THIN FILM CIRCUITS
Identifiers: DIAMOND STANDARD; FINE DIAMOND PARTICLES; X-RAY DIFFRACTION STRESS MEASUREMENT; STRESS IN THIN FILMS; AU THIN FILMS; ± 0.005 DEGREE ACCURACY
OH
Section Class Codes: A0605, A0692, B2524, A9170, B1268
Unified Class Codes: BGCAAP, BGZEAN, SMCEAH, ZGTAA

DIALOG File13: INSPEC-ELEC & COMPUT 69-77/ISS17 (COPR. I.E.E.) (Item 202 of 308) User 674 20oct77

817711 B7537597
RESULTS OF TWO YEARS (1973-1974) OF ACTIVITIES AT TELETRA
IN THE FIELD OF THIN-FILM INTEGRATED CIRCUITS

MODENA, G. (ITALY) VOL.44, NO.7 303-90 JULY 1975
ALTA FREQ.

CODE: ALERJ
A GENERAL PICTURE OF THE TELETRA RESULTS ON THIN FILM
INTEGRATED CIRCUITS IN THE PERIOD 1973-74 IS GIVEN. CERTAIN
PLANT, MACHINES AND SPECIALISED EQUIPMENT USED IN THIN-FILM
INTEGRATED CIRCUIT AND CERTAIN TYPES OF HYBRID CIRCUIT
MANUFACTURE ARE ILLUSTRATED

Descriptores: THIN FILM CIRCUITS; HYBRID INTEGRATED CIRCUITS;
INTEGRATED CIRCUIT PRODUCTION

Identifiers: THIN FILM IC; HYBRID IC; IC PRODUCTION

02
Section Class Codes: B2524, B2540

Unified Class Codes: SMCEAH, SMEAB

Language: ITALIAN

817710 B7537596
TECHNOLOGY AND FABRICATION SUPPORT FOR THICK FILM
MICROELECTRONICS AND PRINTED WIRING BOARDS

SHROTTKE, G. Issued by: IBM FEDERAL SYSTEMS
Report No.: D1-S-1800;

DIV., HUNTSVILLE, ALA., USA;

JUNE 1974

POTENTIAL APPLICATIONS FOR HYBRID MICROELECTRONICS IN ARMY
MISSILES WERE EVALUATED AND SAMPLE HARDWARE DESIGNED.
FABRICATED AND TESTED. THE APPLICATION SELECTED TO BE THE
PRIME DEMONSTRATION VEHICLE WAS THE THAD SIX INCH MISSILE
AUTOPILOT. THE SPECIFIC OBJECTIVES WERE TO DESIGN, FABRICATE
AND EVALUATE HYBRID MODULES TO PERFORM THE CIRCUIT FUNCTIONS
OF THE EXISTING DISCRETE DESIGN, AND TO EVOLVE A MULTILAYER
PRINTED WIRING BOARD AND THIRD LEVEL PACKAGE TO THE POINT THAT
THE OVERALL IMPACT OF THE HYBRID MICROELECTRONICS PACKAGING
APPROACH COULD BE COMPARED WITH THE DISCRETE DESIGN AT THE
AUTOPILOT SUBSYSTEM LEVEL

Descriptores: MISSILES; HYBRID INTEGRATED CIRCUITS; PRINTED
CIRCUITS; PACKAGING; THICK FILM CIRCUITS

Identifiers: THICK FILM MICROELECTRONICS; MULTILAYER PRINTED
WIRING BOARD; HYBRID MICROELECTRONICS PACKAGING; MISSILES

11

Section Class Codes: B2522, B2540, B2230

Unified Class Codes: SMCCAX, SMEAB, SEMAAM

Availability: NTIS, SPRINGFIELD, VA. 22161, USA

817708 B7537594
METHODS FOR MAKING ELECTRONIC CIRCUITS
MAGGS, C.; WEICK, W.W.
Patent No.: USA 3867217 Assignees: BELL TELEPHONE LABS.
INC. Filed: 29 OCT. 1973
10 FEB. 1975

SUCCESSIVE METAL LAYERS ARE PARTIALLY EVAPORATED BY LASER
BEAM AND A STREAM OF ABRASIVE PARTICLES IS APPLIED TO CLEAN
THE EXPOSED SUBSTRATE AND TO ERODE PART OF THE OUTER LAYER,
WHICH IS SELECTIVELY DISSOLVED BY ETCHING

Descriptores: INTEGRATED CIRCUIT PRODUCTION; THICK FILM
CIRCUITS; EVAPORATION; ABRASION; LASER BEAM MACHINING

Identifiers: METAL LAYERS; PARTIALLY EVAPORATED; LASER BEAM;
ABRASIVE PARTICLES; ETCHING; IC PRODUCTION

08

Section Class Codes: B2522, B2080

Unified Class Codes: SMCCAX, EGMAAA

817707 B7537593
GLASS LAYERS AS PROTECTION, ESPECIALLY FOR RESISTIVE
ELEMENTS IN THICK FILM TECHNOLOGY

SZABLA, O.; LUSNIAK-WOJCIKA, D.
PR. PRZEM. INST. ELEKTRON. (POLAND) VOL.15, NO.2 25-34

1974. Code: PPIEAI

DISCUSSES GLASS LAYERS AS DIRECT PROTECTION OF RESISTIVE
ELEMENTS AND CAPACITIVE THICK FILM CIRCUITS AGAINST
ATMOSPHERIC CONDITIONS AND MECHANICAL DAMAGES. GIVES A LIST OF
GLASS TYPES FOR THIS APPLICATION, REQUIREMENTS THEY SHOULD
MEET, AND METHODS OF PROTECTIVE PASTE PREPARATION (12 Refs)

Descriptores: THICK FILM CIRCUITS; THICK FILM RESISTORS;
GLASS; PROTECTIVE COATINGS

Identifiers: RESISTIVE ELEMENTS; CAPACITIVE THICK FILM
CIRCUITS; ATMOSPHERIC CONDITIONS; MECHANICAL DAMAGES;

PROTECTIVE PASTE PREPARATION; GLASS LAYER; PROTECTIVE COATINGS

; THICK FILM RESISTORS PROTECTION

02

Section Class Codes: B2522, B2210

Unified Class Codes: SMCCAX, SEEAAS

Language: POLISH

817705 87537501
SCREEN PRINTING AND SCREEN TENSIONING EQUIPMENT FOR THICK FILM CIRCUITS
FAVRE, J.E.
ELECTRONTECH. AND MIKROTECH. (HUNGARY) VOL.14, NO.6 182-5
JUNE 1975 Coden: FHWAY
DESCRIBES AN EQUIPMENT BASED ON THE 'OFF-PRINT' PRINCIPLE. THE OPERATION IS SEMI-AUTOMATIC. FEEDING AND REMOVAL OF SUBSTRATE PLATES IS MANUAL. THE KNIFE IS OIL HYDRAULICALLY OPERATED, WITH A WIDE RANGE OF VELOCITIES (3..10 CM/S) AND CAN BE OPERATED IN SINGLE STROKES, OR AUTOMATIC CYCLES WITH RATE OF 400 TO 1000/HOUR. ACCURACY NECESSARY FOR REPEATED PRINTING IS ENSURED BY A MICROMETER ADJUSTMENT. AN IMPROVED AUXILIARY APPARATUS FOR THE PREPARATION OF THE SCREEN TENSIONING APPARATUS EMPLOYING PNEUMATIC CYLINDERS EQUIPPED WITH RAPID CLAMPS (4 Refs)
Description: THICK FILM CIRCUITS; INTEGRATED CIRCUIT PRODUCTION
Identifiers: PRINTING; MICROMETER ADJUSTMENT; SCREEN PRINTING; SCREEN TENSIONING EQUIPMENT; INTEGRATED CIRCUIT MANUFACTURE; THICK FILM CIRCUITS MANUFACTURE; OFF PRINT; SEMIAUTOMATIC OPERATION
02
Section Class Codes: B2522
Unified Class Codes: SMCCX
Language: HUNGARIAN

817704 87537500
TECHNOLOGY OF THICK FILM CIRCUITS
CUSETTA, M.
ELETTRIFICAZIONE (ITALY) NO.6 270-6 JUNE 1975 Coden: ELIFAL
GENERAL CONSIDERATIONS, HAVING BEEN DISCUSSED IN A PREVIOUS ARTICLE (SEE 1010., NO.5, P.236 (1975)), THE REQUIRED CHARACTERISTICS OF THICK FILMS USED IN MAKING CONDUCTORS, RESISTORS AND CAPACITORS, ARE EXAMINED IN DETAIL. SOME DESIGN DATA AND TOLERANCES ARE QUOTED, AND MEANS OF ADJUSTING RESISTANCE AND CAPACITANCE VALUES ARE DESCRIBED.
Description: THICK FILM CIRCUITS; THICK FILM RESISTORS; CAPACITORS; CONDUCTORS (ELECTRIC)
Identifiers: CONDUCTORS; RESISTORS; TOLERANCES; THICK FILM CIRCUIT TECHNOLOGY; INK CHARACTERISTICS; CAPACITOR
02
Section Class Codes: B2522
Unified Class Codes: SMCCX
Language: ITALIAN

817391 87537255
LOW FIRING POLYMER THICK FILM ENABLES THE SCREEN PRINTING OF RESISTORS AND CONDUCTORS ON PC BOARDS
MARTIN, F.W.
MICROTECH. DEV. CO., CHICAGO, IL, USA

INSUL./CIRCUITS (USA) VOL.21, NO.8 29-32 JULY 1975
Coden: ISCUBF
DESCRIBES THE USE OF POLYMER THICK FILM TECHNOLOGY TO FABRICATE RESISTORS, CONDUCTORS AND DIELECTRICS DIRECTLY ON PCBS TO REDUCE COSTS. SUBSTRATE MATERIALS INCLUDE STANDARD PCB MATERIALS. THE SHEET RESISTIVITIES ARE AVAILABLE BETWEEN 10 OHMS AND 1 M OHM PER SQUARE. TWO SCREEN PRINTABLE CONDUCTORS, ONE FOR EDGE CONNECTORS AND ONE FOR HIGH CONDUCTIVITY AND GOOD SOLDERABILITY ARE DISCUSSED. THE ADVANTAGES, CHARACTERISTICS AND APPLICATIONS ARE CONSIDERED.
Description: PRINTED CIRCUITS; THICK FILM CIRCUITS; THICK FILM RESISTORS
Identifiers: POLYMER THICK FILM; SCREEN PRINTING; EDGE CONNECTORS; THICK FILM RESISTORS; THICK FILM CONDUCTORS; PRINTING ON PCBS; INSULATING FILMS; 10 TO 1 M OHM PER SQUARE; HIGH CONDUCTIVITY CONDUCTORS
02
Section Class Codes: B2230, B2522, B2210
Unified Class Codes: SEMAAM, SMCCAX, SEEAAS

817322 87537168
FILTER NETWORK WITH CHIP CAPACITOR AND FILM RESISTOR
Patent No.: UK 1384954 Assignees: STC LTD Filed: 16 MARCH 1972

26 FEB. 1975
A CHIP CAPACITOR HAS AT LEAST ONE FILM RESISTOR DEPOSITED INTEGRALLY ON A FACE, THE VALUE OF THE (OR EACH) RESISTOR HAVING BEEN ALTERED BY REMOVAL OF SOME OF THE FILM MATERIAL. THE ALTERATION MAY BE BY EROSION BY A LASER BEAM LEAVING TRACKS. THE RESISTOR MAY BE A THIN FILM NICH RESISTOR WITH THIN FILM AD CONNECTIONS, OVERLAPPING END CONNECTORS AND ADJACENT EDGES OF THE RESISTOR AN ADVANTAGE OF USING A THIN FILM RESISTOR IS THAT THE DEPOSITION TEMPERATURE IS BELOW THE VALUE WHICH WOULD HIGH CAPACITORS. A CLOSE TOLERANCE LOW-POWER RC FILTER WITH HIGH STABILITY (EXCEPT OVER 10 YEARS) AND LOW TEMPERATURE COEFFICIENT OF RC PRODUCT (50 PPM/ DEGREE C) MAY BE PRODUCED.
Description: PASSIVE FILTERS; THIN FILM CIRCUITS; CAPACITORS; THIN FILM RESISTORS; HYBRID INTEGRATED CIRCUITS
Identifiers: CHIP CAPACITOR; FILM RESISTOR; DEPOSITION TEMPERATURE; STABILITY; TEMPERATURE COEFFICIENT; RC FILTER
02
Section Class Codes: B1800, B2524, B2540
Unified Class Codes: ETRAAM, SMCEAH, SMEAAB

STABILIZATION: COMPACT CIRCULATOR: BROAD BAND CIRCULATOR:
LUMPED ELEMENT CIRCULATOR: JUNCTION EIGENINDUCTANCES

02
Section Class Codes: B3290, B2524
Unified Class Codes: EMWAAW SMCEA

805560 B753254
SURVIVAL RATE
CELLS, T.B.
MICROWAVE AND POWER TUBE DIV., RAYTHEON CO., QUINCY, MA, USA
THESE/CIRCUITS (USA) VOL.21, NO.6 19-22 JUNE 1975
Coden: TSCUBF
DISCUSSES THICK-FILM, HIGH RELIABILITY MULTICHIP HYBRID IC
MANUFACTURE USING THE CHIP AND WIRE ASSEMBLY. ASSEMBLY
TECHNIQUES TO INCREASE THE SEMICONDUCTOR CHIP SURVIVAL RATE BY
LIMITING THE CHIP TEMPERATURE EXPOSURE TO BELOW 150C ARE
DESCRIBED. EPOXY DIE ATTACH, ULTRASONIC WIRE BONDING, AND
PACKAGE SEAM WELDING ARE COVERED AND MEASUREMENT RESULTS SHOWN
(1 Ref.)

Descriptions: HYBRID INTEGRATED CIRCUITS; INTEGRATED CIRCUIT PRODUCTION; THICK FILM CIRCUITS; ASSEMBLING IDENTIFIERS; IC MANUFACTURE; PACKAGE SEAM WELDING; MULTICHIP ICs; HYBRID ICs; IC MANUFACTURE; LOW TEMPERATURE PROCESSING; YIELD IMPROVEMENT; US WIRE BONDING; EPOXY DIE ATTACH; ASSEMBLY TECHNIQUES

02 Section Class Codes: B2564, B2540, B2522
Unified Class Codes: SMGEAN, SMEAB, SMCCAX

B05557 B753251
HYBRID MICROCIRCUIT DESIGN GUIDE
Report No.: SLA-74-0333; Issued by: SANDIA LABS.,
ALBUQUERQUE, N.MEX., USA;

A DESIGN GUIDE FOR THIN-FILM HYBRID MICROCIRCUIT TECHNOLOGY IS PROVIDED. GUIDELINES AND CONSTRAINTS FOR LAYING OUT A HYBRID CIRCUIT ARE DEVELOPED. THE AVAILABILITY OF MODEL HYBRID MICROCIRCUITS FROM A PROTOTYPE FACILITY IS REPORTED. DESIGNATORS: HYBRID INTEGRATED CIRCUITS; DESIGN AIDS; DEGENERATE CIRCUIT PRODUCTION; THIN FILM CIRCUITS; SEMICONDUCTOR DEVICE MODELS; THIN FILM CONSTRAINTS; IDENTIFIERS: DESIGN GUIDE; CONSTRAINTS; MODEL HYBRID MICROCIRCUITS; PROTOTYPE FACILITY; THIN FILM HYBRID IC

11
Section Class Codes: B2540, B2524, B1269
Unified Class Codes: SMCAAB, SMCEAH, ADGWAE
Availability: NTIS, SPRINGFIELD, VA. 22161, USA

806423 BT534249
STANDARDIZABLE LOW-PASS VOICE BAND HYBRID CIRCUIT FILTERS
FOR PULSE CODE MODULATION (PCM) COMMUNICATION SYSTEMS
MICHAEL, W.B.; KEYS, L.K.
TRANSMISSION NETWORK DEV. DEPT., BELL-NORTHERN RES., OTTAWA,
ONTARIO, CANADA

LEE, J. SOLID-STATE CIRCUITS (USA) VOL. 5C-10. NO. 1
2229-36 AUG. 1975 Code: IUSCB
A STANDARDIZABLE DESIGN APPROACH TO REALIZE THE VOICE BAND
LOW PASS FILTERS FOR A VARIETY OF PULSE CODE MODULATION (PCM)
COMMUNICATIONS SYSTEMS IS DESCRIBED. THIS DESIGN CONCEPT
INCORPORATES CASCADED RC ACTIVE FILTER SECTIONS, THICK AND
THIN FILM HYBRID TECHNOLOGIES, AND FUNCTIONAL TUNING TO ALLOW
THE USE OF THE SAME HYBRID DESIGN FOR BOTH TRANSMIT AND
RECEIVE FILTERS. FOR A RANGE OF INPUT AND OUTPUT REQUIREMENTS,
TUNING, SENSITIVITY ANALYSES, AND IMPLEMENTATION TRADEOFFS ARE
DESCRIBED. THICK FILM IMPLEMENTATIONS, USING HIGH CHIP
CAPACITORS, WITH THE NEW HIGH STABILITY RESISTOR INKS AS WELL
AS THIN FILM IMPLEMENTATION, USING THE USUAL TANTALUM
INTEGRATED THIN FILM TECHNOLOGY ARE PRESENTED. VERY STRINGENT
REQUIREMENTS HAVE BEEN SUCCESSFULLY MET USING STATE-OF-THE-ART
HYBRID TECHNOLOGIES. (12 R-61)

HYBRID TECHNOLOGIES (12 ROTARY DECODERS); PULSE-CODE MODULATION LINKS; ACTIVE FILTERS; HYBRID INTEGRATED CIRCUITS; THIN FILM CIRCUITS; THICK FILM CIRCUITS; THIN FILM CIRCUITS; HYBRID INTEGRATED CIRCUITS; THIN FILM CIRCUITS; THICK FILM CIRCUITS; LOW PASS VOLTAGE BAND ACTIVE FILTERS; RC FILTERS; TAPING LINKS; FUNCTIONAL LINKS; SENSITIVITY ANALYSES; SAMPLE AND HOLD CIRCUITS; HIGH STABILITY RESISTOR INKES; NPO CAPACITORS; TRANSDUCER INTEGRATED THIN FILM TECHNOLOGY

02
IN CAPACITORS; TANTALUM INTEGRATED THIN FILM TECHNOLOGY

805007	87533044	TEMPERATURE-STABILIZED	1.7-GHZ	BROAD-BAND	LUMPED-ELEMENT
CIRCULATOR			KATERN, H.		

CENTRAL RES. LABS., NIPPON ELECTRIC CO. LTD., NAKAHARA-KU, KAWASAKI, JAPAN
 IITE TRANS. NO. 1 600-96 AUG. 1975 CODEN: JETNAR VOL. MIT-23.
 A NEW CONSTRUCTION TECHNIQUE FOR BROAD-BANDING AND TEMPERATURE STABILIZATION OF A LUMPED-ELEMENT CIRCULATOR IS PRESENTED TO OBTAIN A COMPACT CIRCULATOR FOR PRACTICAL USAGE. BY USING A NEW INTEGRATED WIDE-BANDING NETWORK CONSISTING OF THREE SERIES RESONANT CIRCUITS ON THE BACK OF THE JUNCTION SUBSTRATE, 1.7-GHZ DOUBLE-TUNED AND TRIPLE-TUNED BROAD-BAND CIRCULATORS HAVE BEEN SUCCESSFULLY DEVELOPED. A DESIGN THEORY FOR TEMPERATURE COMPENSATION OF A LUMPED-ELEMENT CIRCULATOR IS ALSO PRESENTED. (15, Refs.)

ALSO PRESENTED (15 HRS)
 Detectors: CIRCULATORS (MICROWAVE); MICROWAVE ISOLATORS;
 MICROWAVE INTEGRATED CIRCUITS; THIN FILM CIRCUITS
 TEMPERATURE COMPENSATION; TEMPERATURE

THICK FILM HYBRID INTEGRATED CIRCUITS: COMPUTER CONTROLLED LASER TRIMMING; SOLDERING; FLIP CHIPS; MANUFACTURE

02
Section Class Codes: B2540, B2522
Unified Class Codes: SMEAAB, SMCCAX

805549 B7533243
EASING PROBLEMS WITH HYBRIDS

BURRITT, A. ENGINEERING (GB) VOL.47, NO.567 60-1 MAY 1975
CODES: ELCEAR
IT IS NOW GENERALLY ACCEPTED THAT THE COST OF HYBRIDS IS GREATER THAN THE TOTAL COST OF THE DISCRETE COMPONENTS THAT MAKE UP AN EQUIVALENT CIRCUIT ON A P.C.B. HOWEVER, WHEN THE COST OF PUTTING THESE COMPONENTS TOGETHER IS ADDED IN, HYBRIDS-AT LEAST WHEN PRODUCED IN LARGE QUANTITIES-ARE ECONOMIC

Descriptores: HYBRID INTEGRATED CIRCUITS; THIN FILM CIRCUITS; THICK FILM CIRCUITS
Identifiers: PACKAGING; RELIABILITY; DISCRETE CIRCUITS; OPTIMUM PERFORMANCE; LIBRARY CHIP; HYBRID INTEGRATED CIRCUITS

02
Section Class Codes: B2540, B2522, B2524
Unified Class Codes: SMEAAB, SMCCAX, SMCEAH

805548 B7533242
FORECAST OF 1980 HYBRID ISSUES

CIRCUITS MANUF. (USA) VOL.15, NO.3 52.4 MARCH 1975
CODES: CMGAF
DISCUSSES HYBRID INTEGRATED CIRCUIT MANUFACTURE, FUTURE COST OF MATERIALS AND REQUIREMENTS OF ENGINEERS, A SURVEY OF HYBRID TECHNOLOGISTS, IS DISCUSSED COVERING THE AREAS: THICK FILM MATERIALS, DEVICE INTERCONNECTION TECHNIQUES, DEVICE PACKAGE TECHNIQUES, AND PACKAGE SEALING TECHNIQUES

Descriptores: HYBRID INTEGRATED CIRCUITS; THICK FILM CIRCUITS; PACKAGING; TECHNOLOGICAL FORECASTING; INTEGRATED CIRCUIT PRODUCTION

Identifiers: SURVEY; PACKAGING; TECHNOLOGICAL FORECASTING; HYBRID INTEGRATED CIRCUITS; THICK FILM MATERIALS; DEVICE INTERCONNECTION TECHNIQUES; PACKAGE SEALING

02
Section Class Codes: B2540, B2522
Unified Class Codes: SMEAAB, SMCCAX

805556 B7533250
COMPILATION OF SPECIFICATIONS DESCRIBING HYBRID MICROCIRCUIT TECHNOLOGY

TAPP, C.M.; SHARP, D.J.
Report No.: SLA-74-0300; Issued by: SANDIA LABS., ALBUQUERQUE, N.MEX., USA;
Contract No.: AT(29-1)789

JUNE 1974
THE SPECIFICATIONS ARE DIVIDED INTO TWO CATEGORIES OF DRAWING NUMBERS. ONE APPLIES TO SPECIAL ISSUE SPECIFICATIONS AND THE PROCESS INVOLVED IN FABRICATING HYBRIDS. THE OTHER DESCRIBES THE MATERIALS USED IN THE HYBRID PROCESS. THE QUALITY CONTROL ASPECTS OF HYBRID MICROCIRCUIT PRODUCTION ARE EXPLAINED

Descriptores: HYBRID INTEGRATED CIRCUITS; PROJECT ENGINEERING; INTEGRATED CIRCUIT PRODUCTION; QUALITY CONTROL

Identifiers: SPECIFICATIONS; DRAWING NUMBERS; MATERIALS; QUALITY CONTROL; HYBRID MICROCIRCUIT PRODUCTION

11
Section Class Codes: B2540, B1261
Unified Class Codes: SMEAAB, ADGBAA
Availability: NTIS, SPRINGFIELD, VA, 22161, USA

805553 B7533247
THICK FILM/FLIP CHIPS-A SYSTEMS APPROACH

EARLY, R.C.
Mobile, RADIO PRODUCTS DEPT., GENERAL ELECTRIC CO., LYNCHBURG, VA, USA

IEEE TRANS. MANUF. TECHNOL. (USA) VOL. MFT-4, NO.1 2-8 SEPT. 1975
CODES: IETMTC
THICK-FILM HYBRID INTEGRATED CIRCUIT PROCESS CURRENTLY DEFINED USED TO REALIZE COMPLEX CIRCUIT FUNCTIONS IN HYBRID FORM IS DISCUSSED. THE THICK-FILM TECHNOLOGY, ACTIVE DEVICE ATTACHMENT, AND PACKAGING ALL PLAY IMPORTANT ROLES IN THE OVERALL SYSTEMS APPROACH. A DESCRIPTION OF THE VARIOUS PROBLEMS WILL BE PRESENTED STARTING WITH THE CHAMIC SUBSTRATE AND ENDING WITH THE COMPLETED PACKAGE. EXTENSIVE USE IS MADE OF COMPUTER-CONTROLLED LASER TRIMMING OF MODULES AFTER TRIMMING OF RESISTORS AND FUNCTIONAL TRIMMING OF MODULES AFTER ASSEMBLY. WHEN PROPERLY USED, THE LASER IS A POWERFUL TOOL. ACTIVE DEVICES ARE ATTACHED USING A SOLDER-REFLOW TECHNIQUE. ALL OF THE CONNECTIONS ON THE ACTIVE DEVICES ARE TERMINATED USING SOLDER BRIDGES CONSISTING OF A TIN/LEAD ALLOY. THERE ARE CORRESPONDING LAND AREAS ON THE CERAMIC SUBSTRATE THAT HAVE BEEN COATED WITH A TIN/LEAD SOLDER. THE LAND AREAS ON THE SUBSTRATE ARE DESIGNED IN SUCH A WAY AS TO RESTRICT THE SOLDER WETTING TO THE SMALL AREA AROUND THE TERMINAL SIMILAR TO THE LOW, "CONTROLLED COLLAPSE" PROCESS. THE TECHNIQUES EMPLOYED RESULT IN THICK-FILM HYBRID INTEGRATED CIRCUITS THAT ARE ECONOMIC, RELIABLE, HIGH IN YIELD, AND OFFER CONSIDERABLE FLEXIBILITY TO THE HYBRID MANUFACTURE (11 REFS)

Descriptores: INTEGRATED CIRCUIT PRODUCTION; THICK FILM

805511 07533190
A NEW RESISTIVE MATERIAL FOR HIGH STABILITY RC NETWORKS.
APPLICATION TO THE PRODUCTION OF ACTIVE FILTERS
MOLIN, M.

LIT. CONFERENCE-SAINTE-HONORINE, FRANCE
COLLOQUE INTERNATIONAL SUR LES MATERIAUX POUR LES COMPOSANTS
ELECTRONIQUES (INTERNATIONAL SYMPOSIUM ON MATERIALS FOR
ELECTRONIC COMPONENTS), 251-7, 1975

2-1 APRIL 1975, PARIS, FRANCE
CIVIL. D'ORGANISATION DU COLLOQUE DE PARIS, PARIS, FRANCE
ONE OF THE TECHNIQUES USED CONSISTS OF INTEGRATING ON THE
SAME SUBSTRATE, ANODIZED TANTALUM THIN FILM CAPACITORS (TEMP.

COEFFICIENT APPROXIMATELY +200 PPM/DEGREE) AND THIN FILM
RESISTORS, WITH A TEMPERATURE COEFFICIENT APPROXIMATELY -200
PPM/DEGREE. A SUMMARY OF THE DEVELOPMENT OF A SUITABLE NEW
RESISTIVE MATERIAL FOR MICROELECTRONIC APPLICATIONS IS GIVEN.

THE DIFFERENT STEPS REVIEWED ARE: PREPARATION OF THIN FILMS,
INFLUENCE OF THE CATHODIC SPUTTERING PARAMETERS, COMPARISON
BETWEEN THE CHARACTERISTICS OF THE FILMS OBTAINED IN DIFFERENT
SPUTTERING ATMOSPHERES, COMPARISON OF THE STABILITY OF
NITRIDED TA, OXY-NITRIDED TA AND AL-TA ALLOY FILMS

DESCRIPTORS: ACTIVE FILTERS; THIN FILM RESISTORS; SPUTTERING
; THIN FILM CIRCUITS
; IDENTIFIERS: INTEGRATED CIRCUIT APPLICATION; THIN FILM
PREPARATION; NITRIDED TA FILMS; OXYNITRIDED TA FILMS;
RESISTIVE MATERIAL; HIGH STABILITY RC NETWORKS; ACTIVE FILTERS
; THIN FILM RESISTORS; TEMPERATURE COEFFICIENT; CATHODIC
SPUTTERING PARAMETERS; CHARACTERISTICS; SPUTTERING ATMOSPHERES
; AL-TA ALLOY FILMS

06
Section Class Codes: B2524, B1880
Unified Class Codes: SMCEAH, ETRAAM
Language: FRENCH

805510 07533189, C7520003
READ ONLY MEMORY WITH ANNULAR FUSE LINKS

TAYLOR, W.K.
Patent No.: USA 3063231 Assignees: NRDG Filed: 23 JULY
1971

20 JAN. 1975
APPLICATION OF A VOLTAGE OF A PREDETERMINED MAGNITUDE
BETWEEN TWO CONDUCTORS CAUSES FUSING OF THE CORRESPONDING LINK
OVER AN ANNULAR AREA OF FILM SURROUNDING THE FIRST CONDUCTOR,
BUT APPLICATION OF A VOLTAGE OF HALF THIS MAGNITUDE DOES NOT
CAUSE FUSING

DESCRIPTORS: READ-ONLY STORAGE; THIN FILM RESISTORS; THIN
FILM CIRCUITS
; IDENTIFIERS: READ ONLY MEMORY; THIN FILM ANNULAR FUSE LINKS
06
Section Class Codes: B2524, C6590, B2210
Unified Class Codes: SMCEAH, ANZAAM, SEEAAS

805509 07533188
SIO CAPACITORS FOR HIGH FREQUENCY THIN FILM CIRCUITS

MAYER, G.; HOSKMA, K.H.
SIEMENS AG, MUNICH, GERMANY
NACHRICHTENTECH. Z. (INZ) (GERMANY) VOL.25, NO.6 207-11
JUNE 1975 Codon: NAZEA

THE STRUCTURE OF SIO CAPACITORS IS DESCRIBED. THEY ARE MADE
TO BE SELFHEALING. THEREFORE THE YIELD IN PRODUCTION IS
PRACTICALLY 100PERCENT. THE DIELECTRIC PROPERTIES ARE GIVEN.
WITH AN ADJUSTMENT METHOD BY TESLA DISCHARGE IT IS POSSIBLE TO
TRIM THESE CAPACITORS TO AN ACCURACY OF +0.1-0.1PERCENT OR

0.05PF. THE STABILITY IS EXCELLENT. E.G. IN A LONG TERM TEST
AT 150 DEGREES THE MEAN CAPACITANCE DEVIATION AFTER 20000 H
AMOUNTED TO -0.04PERCENT. THIN FILM SIO CAPACITORS MAY BE
INTEGRATED EITHER WITH CRUI- OR TA/SUB 2/N-RESISTOR NETWORKS.
THEIR PROPERTIES IN DIFFERENT ARRANGEMENTS WITH TA/SUB 2/N
RESISTORS ARE DISCUSSED. AN EXAMPLE OF APPLICATION-THE
NEGATIVE FEEDBACK NETWORK OF THE REPEATER OF THE 60 MHZ
CARRIER FREQUENCY SYSTEM-SHOWS, THAT SIO CAPACITORS FULFIL
HIGH PERFORMANCE. (7 Refs)

DESCRIPTORS: THIN FILM CIRCUITS; THIN FILM CAPACITORS
; IDENTIFIERS: SIO CAPACITORS; HIGH FREQUENCY THIN FILM
CIRCUITS; CRUI; TA/SUB 2/N-RESISTOR NETWORKS; NEGATIVE
FEEDBACK NETWORK; REPEATER; 60 MHZ CARRIER FREQUENCY SYSTEM
02
Section Class Codes: B2524, B9670
Unified Class Codes: SMCEAH, SMAAR

805508 07533187
FABRICATION OF THIN FILM RESISTORS AND RESISTOR NETWORKS BY

A SELECTIVE ETCHING PROCESS
BAMA, S.C.; RUTHALA, D.P.; MARATHE, B.R.
CENTRAL ELECTRONICS ENGG. RES. INST., PILANI, INDIA
J. INST. ELECTRON. AND TELECOMMUN. ENG. (INDIA) VOL.20,
NO.12 602-6 DEC. 1974 Codon: JIETAU

RESULTS ON THE SELECTIVE ETCHING OF A TWO LAYER SYSTEM
(RESISTIVE LAYER AND CONDUCTIVE LAYER) ON GLASS SUBSTRATES TO
ACHIEVE RESISTORS/RESISTOR NETWORKS ARE DESCRIBED. THE METHOD
RESULTS IN GOOD RESOLUTION OF THIN FILM PATTERNS, SMALLER AREA
FLEXIBILITY, HIGHER YIELD AND LOWER COST THAN WITH THE
PREVIOUSLY USED METHODS (2 Refs)

DESCRIPTORS: THIN FILM RESISTORS; THIN FILM CIRCUITS;
INTEGRATED CIRCUIT PRODUCTION; ETCHING
; IDENTIFIERS: SELECTIVE ETCHING; TWO LAYER SYSTEM; GLASS
SUBSTRATES; FLEXIBILITY; HIGHER YIELD; LOWER COST; THIN FILM
RESISTORS; THIN FILM RESISTOR NETWORKS; INTEGRATED CIRCUIT
PRODUCTION
02
Section Class Codes: B2524, B2210
Unified Class Codes: SMCEAH, SEEAAS

- 805503 B7533182
THICK FILM CIRCUITS TECHNOLOGY
COMETTA, M.
ELETTRIFICAZIONE (ITALY) NO.5 236-40 MAY 1975 Coden:
ELTAL
AFTER BRIEF REVIEW OF INTEGRATED CIRCUIT TECHNOLOGY QUOTING
COMPARISON TABLES OF BASIC CHARACTERISTICS, APPLICATIONS,
COSTS ETC., THE AUTHOR CONCENTRATES ON THICK FILM TECHNOLOGY.
TECHNICAL MATERIALS AND SUBSTRATES USED IN PRODUCTION ARE
DISCUSSED. QUOTING MATN ADVANTAGES AND USAGE. DESIGN
CONSIDERATION AND STAMPING METHODS
Descriptors: THICK FILM CIRCUITS; INTEGRATED CIRCUIT
PRODUCTION
Identifiers: INTEGRATED CIRCUIT; THICK FILM TECHNOLOGY;
MATERIALS; SUBSTRATES; PRODUCTION; DESIGN; STAMPING METHODS
02
Section Class Codes: B2522, B1269
Unified Class Codes: SMCCAX, ADOMAE
Language: ITALIAN
- 805114 B7532733
ACTIVE RC FILTER MADE IN THICK FILM TECHNIQUE
MIJALOVIC, M.
LAB. ELNOS-IDK, BEOGRAD, YUGOSLAVIA
TEHNIKA (YUGOSLAVIA) VOL.30, NO.3 572-5 1975 Coden:
TENIAS
ELNOS-IDK LABORATORY HAS DEVELOPED THE ACTIVE RC FILTER
USING THICK FILM TECHNIQUE WITH THE FOLLOWING FEATURES:
PASS-BAND: 0 TO 4.0 KHZ; ATTENUATION IS HIGHER THAN 30
DB/OCTAVE; OPERATING TEMPERATURE RANGE: -300C TO 1000C; SUPPLY
VOLTAGE: +OR- 12 V; DIMENSIONS: 20-14-12 MM (3 Refs)
Descriptors: ACTIVE FILTERS; THICK FILM CIRCUITS
Identifiers: THICK FILM; ACTIVE RC FILTER; SPECIFICATIONS
02
Section Class Codes: B1880, B2522
Unified Class Codes: ETRAAH, SMCCAX
Language: CROATIAN
- 805504 B7533183
THICK LAYER TECHNOLOGY FOR HYPERFREQUENCIES
CHET, LAMHON, FRANCE
ELECTRON. AND MICROELECTRON. IND. (FRANCE) NO.205 15-17
15 MAY 1975 Coden: LECIAS
A GENERAL DISCUSSION OF NEW DEVELOPMENTS IS ILLUSTRATED BY A
DESCRIPTION OF A THICK FILM AMPLIFIER WITH DISTRIBUTED
CONSTANT COMPONENTS FOR THE L-BAND. THE COMPONENTS HAD BEEN
SEPARATELY STUDIED AT FREQUENCIES UP TO 12 GHz
Descriptors: THICK FILM CIRCUITS; MICROWAVE AMPLIFIERS;
MICROWAVE INTEGRATED CIRCUITS
Identifiers: NEW DEVELOPMENTS; THICK FILM AMPLIFIER;
DISTRIBUTED CONSTANT COMPONENTS; L-BAND; SHF; 12 GHz; THICK
FILM TECHNOLOGY
02
Section Class Codes: B2522, B1840, B1820
Unified Class Codes: SMCCAX, ETHAAB, ETEAAD
Language: FRENCH
- 805506 B7533185
RECENT ADVANCES IN PLATINUM-SILVER THICK-FILM CONDUCTORS
STEIN, S.J.; HUANG, C.; CANG, L.; SCHULTZ, G.
ELECTRO-SCIENCE LABS., INC., PENNSAUKEN, N.J., USA
SOLID STATE TECHNOL. (USA) VOL.18, NO.5 25-33 MAY 1975
Coden: SSTAP
A NUMBER OF NEW DEVELOPMENTS IN PLATINUM-SILVER CONDUCTOR
MATERIALS AND THEIR PHYSICAL AND ELECTRICAL PROPERTIES ARE
PRESENTED. THE ADVANTAGES AND DISADVANTAGES, AS RELATED TO
PERFORMANCE AND COST OF VARIOUS CONDUCTOR COMPOSITIONS ARE
DISCUSSED. A GROUP OF FRITLESS PT-AG COMPOSITIONS INCLUDING
ONE OF PURE AG ARE STUDIED AND THEIR ADHESION, ADHESION AFTER
STORAGE AT 150 DEGREES C, CONDUCTIVITY, SOLDERABILITY, SOLDER
LEACH RESISTANCE AND OTHER PROPERTIES ARE REPORTED. ANOTHER
GROUP OF PT-AG COMPOSITIONS CONTAINING GLASS AS A BINDER IS
ALSO REPORTED. THESE DATA ARE PRESENTED IN TERMS OF INCREASING
PLATINUM CONTENT. THE COMPATIBILITIES AND GEOMETRY EFFECTS OF
THE COMPOSITIONS WITH VARIOUS RESISTOR TYPES ARE PRESENTED.
RESULTS OF SILVER MIGRATION STUDIES ILLUSTRATE ONE OF THE
POTENTIAL PROBLEMS WHICH MUST BE CONSIDERED IN USING
CONDUCTORS OF HIGH SILVER CONTENT. SUGGESTIONS FOR DESIGNING
CIRCUIT LAYOUTS AND MINIMIZING MIGRATION DIFFICULTIES ARE
GIVEN (19 Refs)
Descriptors: THICK FILM CIRCUITS; CONDUCTORS (ELECTRIC);
REVIEWS
Identifiers: PT-AG; THICK FILM CONDUCTORS; ADHESION;
CONDUCTIVITY; SOLDERABILITY; SOLDER LEACH RESISTANCE; GLASS;
CIRCUIT LAYOUTS
02
Section Class Codes: B2522
Unified Class Codes: SMCCAX

DIALOG File13: INSPEC-ELEC & COMPUT 69-77/ISS17 (COPR. I.E.E.) (Item 306 of 388) User 674 28oct77

804025 B7532509
ON THE PROPAGATION OF VOLTAGE IMPULSES IN THIN FILM
DISTRIBUTED PARAMETER NETWORKS
THIMM, R. R.
INST. FÜR NETZWERK- UND SYSTEMTHEORIE, UNIV. STUTTGART,
STUTTGART, GERMANY VOL.29, NO.6 171-7 JUNE 1975
Codon: F01Z33
VARIATIONS OF PULSE AMPLITUDE AND PULSE DURATION DURING THE
PROPAGATION OF RECTANGULAR VOLTAGE IMPULSES ARE STUDIED. THE
INVESTIGATION IS BASED ON THE CHARACTERISTIC THEORY OF PARTIAL
DIFFERENTIAL EQUATIONS. A FEW EXAMPLES SHOW THE EFFECTIVENESS
OF THE METHOD (19 Refs)
Descriptors: DISTRIBUTED PARAMETER NETWORKS; THIN FILM
CIRCUITS; PARTIAL DIFFERENTIAL EQUATIONS
Identifiers: THIN FILM DISTRIBUTED PARAMETER NETWORKS; PULSE
AMPLITUDE; PULSE DURATION; RECTANGULAR VOLTAGE IMPULSES;
PARTIAL DIFFERENTIAL EQUATIONS
02
Section Class Codes: B1650, B2524
Unified Class Codes: ERMAAH, SWCEAH
Language: GERMAN

793773 B7528095
REVALUATION OF SOLDER BUMP FLIP CHIPS IN THICK FILM SOLDER
REFLOW HYBRIDS
BROWNEWELL, D.
MOTOROLA SEMICONDUCTOR PRODUCTS DIV., PHOENIX, AZ, USA
INSUL. CIRCUITS (USA) VOL.21, NO.5 33-6 MAY 1975
Codon: 1SC0BF
DISCUSSES DEVICE ASSEMBLY TECHNIQUES DEVELOPED TO REDUCE
LABOUR AND MATERIAL COSTS, TYPES AND FORMATS OF AVAILABLE
SEMICONDUCTOR DEVICES AND METHODS OF ATTACHMENT ARE DISCUSSED.
FLIP CHIP BONDING BY REFLOW SOLDERING, DEVICE AVAILABILITY,
RELIABILITY, AND ECONOMIC CONSIDERATIONS ARE DISCUSSED. A
TABLE OF ASSEMBLY TECHNIQUES, BEAM LEAD, CHIP AND WIRE, AND
FLIP CHIP REFLOW IS GIVEN. A TABLE OF COMPARATIVE COSTS IS
ALSO SHOWN
Descriptors: ASSEMBLING; HYBRID INTEGRATED CIRCUITS;
FLIP-CHIP DEVICES; SOLDERING; THICK FILM CIRCUITS
Identifiers: SOLDER BUMP FLIP CHIPS; SOLDER REFLOW HYBRIDS;
ASSEMBLY TECHNIQUES; RELIABILITY; ECONOMIC CONSIDERATIONS;
COMPARATIVE COSTS; THICK FILM HYBRID CIRCUITS; HYBRID
INTEGRATED CIRCUITS
02
Section Class Codes: B2564, B2540, B2522
Unified Class Codes: SWGEAN, SWEAAH, SMCCAH

805108 B7532727
FILTER SYNTHESIS USING DISTRIBUTED RESISTANCE-CAPACITY
CIRCUITS. II
OIDE ELECTR. (FRANCE) VOL.55, NO.6 347-51 JUNE-JULY
1975 Codon: OMELAS
FOR PT. I SEE 1810., NO.5, P.200-303 (1975). THIS PART GIVES
DETAILED CONSIDERATION TO THE CONSTRUCTIONAL ASPECTS OF THESE
CIRCUITS. THE TECHNIQUES INVOLVED IN THE PRODUCTION OF THIN
LAYERS ARE CONSIDERED THE SIMPLEST. PRACTICAL APPROACHES ARE
DESCRIBED AND TECHNICAL DATA OF ELECTRICAL CHARACTERISTICS AND
PHYSICAL DIMENSIONS IS GIVEN. IMPEDANCE SYNTHESIS AND TRANSFER
FUNCTIONS OF CIRCUITS USING UNIFORMLY DISTRIBUTED ELEMENTS,
AND EXAMPLES SHOWING DIFFERENT DIPOLE ARRANGEMENTS, ARE
ILLUSTRATED BY LINE DIAGRAMS. CIRCUIT IMPEDANCE FORMULAE ARE
GIVEN WITH REFERENCES TO A NUMBER OF TRANSFORM THEOREMS. THE
METHODS FOLLOWED IN THE SYNTHESIS OF AN IMPEDANCE, OR
ADMITTANCE, AND CIRCUITS USING LUMPED OR DISTRIBUTED ELEMENTS
ARE SHOWN. THE GEOMETRICAL CONSTRUCTION OF A DISTRIBUTED
ELEMENT CIRCUIT FOR IMPEDANCE SYNTHESIS IS INDICATED
Descriptors: PASSIVE FILTERS; THIN FILM CIRCUITS;
DISTRIBUTED PARAMETER NETWORKS; LINEAR NETWORK SYNTHESIS;
TRANSFER FUNCTIONS
Identifiers: CONSTRUCTIONAL ASPECTS; THIN LAYERS; PHYSICAL
DIMENSIONS; TRANSFER FUNCTIONS; UNIFORMLY DISTRIBUTED RC
ELEMENTS; IMPEDANCE SYNTHESIS; FILTER SYNTHESIS
02
Section Class Codes: B1880, B1650, B2524
Unified Class Codes: ETMAAH, ERMAAH, SWCEAH
Language: FRENCH

805044 B7532646
INTEGRATED CIRCUIT BALANCED MICROWAVE MIXER WITH SCHOTTKY
DIODES
AJMAJLER, W.; BARANSKA, M.; LASOTA, M.
PIB, OSRODKA BADAJ.-ROZWOJOWEGO ELEKTRON. PRZEMISLOWEJ (POLAND)
VOL.3, NO.4 65-8 1975 Codon: POBRCH
THE MANUFACTURING TECHNOLOGY OF A MICROWAVE MIXER IS
DESCRIBED. VAPOUR DEPOSITION AND PHOTOLITHOGRAPHIC TECHNIQUES
WERE EMPLOYED FOR PRODUCING THIN FILM CIRCUITS INCLUDING
AUXILIARIES (DIVIDERS, FILTERS ETC.). A BRANCHED CONFIGURATION
WAS CHOSEN FOR THE DIVIDER ON THE BASIS THAT TOLERANCES FOR
OTHER SOLUTIONS (30N, COUPLER HYBRID RING) WERE TOO DIFFICULT
TO MAINTAIN (20 Refs)
Descriptors: MIXERS (CIRCUITS); SCHOTTKY-BARRIER DIODES;
VAPOUR DEPOSITION; PHOTOLITHOGRAPHY; THIN FILM CIRCUITS
Identifiers: SCHOTTKY DIODES; MANUFACTURING TECHNOLOGY;
PHOTOLITHOGRAPHIC TECHNIQUES; THIN FILM CIRCUITS; BRANCHED
CONFIGURATION; IC BALANCED MICROWAVE MIXER; VAPOUR DEPOSITION
02
Section Class Codes: B1060, B2524, B1269
Unified Class Codes: ETMAAG, SWCEAH, ADGMAE
Language: POLISH

793771 B7520082
EFFECT OF SOLDERING FLUX ON TA/SUB 2/N RESISTORS
HOF, G.J.
Report No.: SLA-73-1045: Issued by: SANDIA CORP.,
ALBUQUERQUE, N.MEX., USA;
Contract No.: AT(29-1)-789
APRIL 1974

ASSEMBLY BY SOLDERING RESULTS IN THE PRESENCE OF EXCESS FLUX
THAT IS NORMALLY REMOVED WITH ALCOHOL OR TRICHLOROETHYLENE. IN
HYBRID MICROCIRCUITS, SOLVENTS MAY BE RETAINED IN CREVICES OR
VOIDS. THIS STUDY CONSIDERS THE EFFECT OF FLUX ON TA/SUB 2/N
RESISTORS IN HYBRID MICROCIRCUITS ASSUMING THAT EXCESS FLUX IS
NOT REMOVED TO AVOID USING SOLVENTS. THESE RESISTORS WERE
TESTED FOR STABILITY DURING HEATING IN AIR AT 150 DEGREES FOR
200 HOURS. FLUX DOES CAUSE A RESISTANCE VALUE INCREASE AND
EXCESS FLUX REMOVAL IS RECOMMENDED

Descriptors: HYBRID INTEGRATED CIRCUITS; THIN FILM RESISTORS;
SOLDERING; TANTALUM COMPOUNDS; INTEGRATED CIRCUIT TESTING;
Thin Film Circuits
Identifiers: TA/SUB 2/N RESISTORS; SOLDERING FLUX; HYBRID
MICROCIRCUITS; STABILITY; EXCESS FLUX REMOVAL
11
Section Class Codes: B2540, B2210, B2524
Unified Class Codes: SMEA8B, SMEAAS, SMEAH
Availability: NTIS, SPRINGFIELD, VA, 22151, USA

793769 B7520081
MATERIALS CONTROL FOR THE MANUFACTURE OF THIN-FILM HYBRID
CIRCUITS
CLASS, W.; MURRAY, G.T.
CERAMIC PRODUCTS DIV., MATERIALS RES. CORP., ORANGEBURG,
N.Y., USA
SOLID STATE TECHNOL. (USA) VOL.18, NO.5 34-41 MAY 1975
Code: 55TEAP

THE MANUFACTURE OF A THIN FILM HYBRID CIRCUIT IS A COMPLEX
MULTIPLE STEP OPERATION IN WHICH DIFFERENT MATERIALS INTERACT
IN A COMPLEX MANNER TO YIELD THE FINAL PRODUCT. THIS ARTICLE
DEALS WITH THE VARIETY OF BOTH COATING AND SUBSTRATE MATERIALS
USED, THE RATIONALE BEHIND THEIR USE, AND THE MANNER IN WHICH
THEY ARE BELIEVED TO INTERACT TO YIELD THE FINAL PRODUCT (6
Refs.)

Descriptors: HYBRID INTEGRATED CIRCUITS; THIN FILM CIRCUITS;
INTEGRATED CIRCUIT PRODUCTION;
Identifiers: MATERIALS CONTROL; MANUFACTURE; THIN FILM
HYBRID CIRCUIT; COATING; SUBSTRATE
02
Section Class Codes: B2540, B2524, B1269
Unified Class Codes: SMEA8B, SMEAH, SMEAH

793768 B7520080
DESIGN OF TEMPERATURE-CONTROLLED SUBSTRATES FOR HYBRID
MICROCIRCUITS

GREENHOUSE, H.M.; MCGILL, R.L., JR.
RHOIX CORP., BALTIMORE, MD., USA
MICROELECTRONICS (GB) VOL.6, NO.1 39-50 SEPT. 1974
Code: MICE89

DEALS WITH THE CRITERIA THAT GOVERN THE DESIGN OF
TEMPERATURE-CONTROLLED SUBSTRATES FOR HYBRID MICROCIRCUITS.
PERTINENT THERMAL PARAMETERS FOR THE MORE IMPORTANT
MICROCIRCUIT FABRICATION MATERIALS ARE PRESENTED IN TABULAR
FORM, ALONG WITH SEVERAL USEFUL UNIT-CONVERSION FACTORS.
SUBSTRATE HEAT LOSSES, DUE TO CONDUCTION, CONVECTION AND
RADIATION ARE THEN ANALYSED, AND EQUATIONS ARE DEVELOPED FOR
DETERMINING OPTIMUM SUBSTRATE TEMPERATURE, STEADY STATE INPUT
POWER AND WARM UP CHARACTERISTICS. CONTROL CIRCUIT DESIGN IS
DISCUSSED, AND COOLING RADIATION IS GIVEN TO POWER DISSIPATION BY
CIRCUITRY OFF AS WELL AS ON THE SUBSTRATE. THE EFFECTS OF
CHANGES IN AMBIENT TEMPERATURE ON TEMPERATURE-CONTROLLED-MICRO-
CIRCUIT PERFORMANCE ARE ANALYSED. TWO APPLICATIONS OF THIS
TECHNOLOGY ARE DESCRIBED

Descriptors: TEMPERATURE CONTROL; HYBRID INTEGRATED CIRCUITS;
SUBSTRATES
Identifiers: TEMPERATURE CONTROLLED SUBSTRATES; HYBRID
MICROCIRCUITS; THERMAL PARAMETERS; MICROCIRCUIT FABRICATION;
OPTIMUM SUBSTRATE TEMPERATURE; STEADY STATE INPUT POWER; WARM
UP CHARACTERISTICS; CONTROL CIRCUIT DESIGN; POWER DISSIPATION
02
Section Class Codes: B2540
Unified Class Codes: SMEA8B

793767 B7528879
 SOME TECHNOLOGICAL PROBLEMS OF HIGH COMPLEXITY THICK FILM
 HYBRID CIRCUITS

BONIFERT, J.: BARANY, M.S.J.
 MIRADSTECH, IPARI KUT. INTIEZ. KOZL. (HUNGARY) VOL.15
 39-63 4 APRIL 1975 Coden: HINKAB

A SHORT REVIEW OF THE TECHNOLOGICAL COMPATIBILITY OF THE
 MATERIALS USED IN THE MULTILAYER THICK FILM TECHNOLOGY, I.E.
 THE EFFECTS CAUSING MIGRATION, LEACHING, SWIMMING AND FLOW-IN,
 IS GIVEN. THE PROBLEMS ARISING IN THE MULTILAYER TECHNOLOGY
 ARE SOLVED BY EVALUATION OF THE EXPERIMENTS AND BY THAT OF THE
 CONTROL-SERIES. A MODEL-CIRCUIT HAS BEEN DEVELOPED TO COMPARE
 THE RESULTS OF THE TYPE-TESTING AND THE ELECTRICAL
 CHARACTERISTICS OF THE MULTILAYER STRUCTURE. THE ELECTRICAL
 TESTING OF THE MULTILAYER STRUCTURES RELYING UPON THE MEASURED
 DATA OBTAINED AND THEIR DEVIATION HAS BEEN EVALUATED BY
 CONSIDERING THE TYPICAL AND MAXIMUM CATALOGUE-DATA REFERRING
 TO THE CONDUCTING AND INSULATING PASTES. DATA FOR THE
 PRACTICAL DESIGN OF MULTILAYER HYBRID CIRCUITS ARE GIVEN (10
 Refs)

Descriptors: HYBRID INTEGRATED CIRCUITS; THICK FILM CIRCUITS
 Identifiers: HIGH COMPLEXITY THICK FILM HYBRID CIRCUITS
 MIGRATION; LEACHING; SWIMMING; MULTILAYER TECHNOLOGY;
 ELECTRICAL TESTING; MODEL CIRCUIT

Section Class Codes: B2540, B2522
 Unified Class Codes: SMEAAB, SMCCAX
 Language: HUNGARIAN

793766 B7528878
 POWER TRANSISTORS IN THICK FILM CIRCUITS
 HETHERINGTON, D.
 NEWMARKET TRANSISTORS LTD., NEWMARKET, ENGLAND
 ELECTRON. ANZ. (GERMANY) VOL.7, NO.4 95-6 APRIL 1975
 Coden: EAHZAG

NEW DEVELOPMENTS IN HYBRID TECHNOLOGY MAKE IT FEASIBLE TO
 MOUNT POWER TRANSISTOR CHIPS AND IC CHIPS ON A SINGLE CERAMIC
 SUBSTRATE. THEREBY, THE LARGER PART OF THE AMPLIFIER'S
 COMPONENTS ALONG WITH THE IC CAN BE COMBINED IN A COMPACT
 MODULE HAVING ABOUT THE SIZE OF A POSTAGE-STAMP AND A
 THICKNESS OF SOME MILLIMETERS. THE ARTICLE DESCRIBES SUCH
 HYBRID AMPLIFIERS FOR OUTPUT POWERS UP TO 50 WATTS
 Descriptors: THICK FILM CIRCUITS; POWER TRANSISTORS; HYBRID
 INTEGRATED CIRCUITS; POWER AMPLIFIERS
 Identifiers: 50 W; POWER TRANSISTORS; THICK FILM CIRCUITS;
 HYBRID TECHNOLOGY; SINGLE CERAMIC SUBSTRATE; COMPACT MODULE;
 HYBRID AMPLIFIERS

Section Class Codes: B2540, B1840, B2470, B2522
 Unified Class Codes: SMEAAB, ETHAAB, SKNAAN, SMCCAX
 Language: GERMAN

793742 B7528840
 ANTI-COMPROMISE MICROELECTRONIC CIRCUIT
 BAYMER, B.J.; KAPP, E.J.; KEISLER, F.Z.
 Patent No.: USA 3860835 Assignees: US NAVY Filed: 10
 FEB. 1971

14 JAN. 1975
 DISCLOSES A METHOD OF PRODUCING AN ANTI-COMPROMISE THIN FILM
 CIRCUIT MODULE BY VACUUM DEPOSITION
 Descriptors: THIN FILM CIRCUITS; VAPOR DEPOSITION;
 INTEGRATED CIRCUIT PRODUCTION; MODULES
 Identifiers: ANTI-COMPROMISE THIN FILM CIRCUIT MODULE; VACUUM
 DEPOSITION

OR
 Section Class Codes: B2524
 Unified Class Codes: SMCEAH

793447 B7528490
 SUBSTRATE HOLDING DEVICE FOR USE IN SCREEN PRINTING MACHINES
 GRYL, F.J.
 TECH. DIG. (USA) NO.38 15-16 APRIL 1975 Coden:
 TONDAV

DESCRIBES A HOLDING DEVICE FOR SCREEN PRINTING BILEVEL
 SUBSTRATES AND MULTILAYER CIRCUIT BOARDS, ON ONE SURFACE AND
 IN THE HOLES BETWEEN OPPOSITE SURFACES OF A SUBSTRATE. A
 SPECIAL ADAPTATION OF CONVENTIONAL SCREEN PRINTERS, A
 SUITABLE INKING TECHNIQUES TO MAINTAIN ACCURATE POSITIONING
 BEFORE, DURING, AND AFTER THE INKING OPERATION; DRAW INK
 THROUGH THE SUBSTRATE HOLE PATTERN EVENLY AND REPEATEDLY; AND
 ACCOMMODATE ANY SUBSTRATE HOLE PATTERN IS DESCRIBED
 Descriptors: PRINTED CIRCUITS; THICK FILM CIRCUITS;
 METALLISATION
 Identifiers: INKING IN HOLES; PRINTED CIRCUIT BOARDS; THICK
 FILM CIRCUITS; SUBSTRATE HOLDING DEVICE; SCREEN PRINTING;
 BILEVEL SUBSTRATES; MULTILAYER CIRCUIT BOARDS; INKING
 TECHNIQUES

02
 Section Class Codes: B2230, B2522, B1269
 Unified Class Codes: SEMAAB, SMCCAX, ADGMAE

DEPTH: CRITICAL CURRENT; THIN FILM CIRCUITS

06
Section Class Codes: B4230, B2340, B4427
Unified Class Codes: BECCAY, SGAAAL, BRCRAG

702461, B7525498
HYBRID INTEGRATED OSCILLATOR FOR PUSH-BUTTON DIALING

ITO, Y.
NIPPON TELEGRAPH AND TELEPHONE CORP., MUSASHINO, TOKYO
ELECTRON, AND COMMUN. JAP. (USA) VOL.57, NO.1 119-28
JAN. 1974, Color: EQUAL
CIRCUITS CONSISTING OF THIN-FILM TANTALUM RC ELEMENTS AND
BEAMLEAD IC'S ARE STUDIED WITH A VIEW TO REDUCING THE SIZE OF
TELEPHONES. A TWIN-TEE RC CIRCUIT DESIGN TECHNIQUE FOR
MINIMIZING THE AREA OCCUPIED BY THE PATTERN IS DESCRIBED AND A
DYNAMIC FREQUENCY TRIMMING METHOD USING A SINGLE RESISTIVE
ELEMENT TAKES ADVANTAGE OF SMALL RELATIVE DEVIATION OF
CAPACITANCES OF THIN-FILM CAPACITORS WITHIN THE SUBSTRATE. IN
CIRCUIT DESIGN CONDITIONS ARE DERIVED FROM THE ANALYSIS OF THE
EFFECTS ON THE OSCILLATION FREQUENCY OF THE INPUT AND OUTPUT
IMPEDANCES, PHASE SHIFTS, AND VOLTAGE GAIN, WHERE THE
FREQUENCY VARIATIONS DUE TO CHANGES IN THE CHARACTERISTICS OF
THE CIRCUIT ARE CONSIDERED (B Refs)
DESCRIPTORS: TELEPHONE STATION EQUIPMENT; OSCILLATORS;
HYBRID INTEGRATED CIRCUITS; THIN FILM CIRCUITS; BEAM-LEAD
DEVICES

IDENTIFIERS: THIN FILM RC OSCILLATOR; BEAM LEAD IC; TWIN T
CIRCUIT; MU CIRCUIT; PUSH BUTTON DIALING; DYNAMIC FREQUENCY
TRIMMING METHOD; HYBRID INTEGRATED OSCILLATOR
02
Section Class Codes: B3532, B1850, B2540, B2524
Unified Class Codes: FECCAY, ETMAAR, SMEAAB, SMCEAH

702091, B7525990
APPLICATIONS OF A ZERO-FREQUENCY SUPERCONDUCTING INDUCTANCE

BRIDGE
MESERVEY, R.; TEDROW, P.M.; PARASKEVOPOULOS, D.
MIT, CAMBRIDGE, MASS., USA
AMERICAN PHYS. SOC., IEE, ARGONNE NAT. LAB., ET AL
IEEE TRANS. MAGN. (USA) VOL. MAG-11, NO.2 720-3 MARCH
1975, Color: IENCAO
1974 APPLIED SUPERCONDUCTIVITY CONFERENCE 30 SEPT. - 2
OCT. 1974 ARGONNE, ILL. USA
THE BRIDGE USES A POINT CONTACT SOLID AS A CURRENT NULL
DETECTION. THE UNKNOWN AND STANDARD INDUCTORS ARE AT LIQUID
HELIUM TEMPERATURE, BUT THE BRIDGE IS BALANCED BY RESISTANCE
ADJUSTMENTS AT ROOM TEMPERATURE. THE POINT BRIDGE CAN DETECT
A CHANGE OF 1 PART IN 10¹⁰ IN A 100 OHM INDUCTANCE AND HAS
VARIOUS ADVANTAGES OVER AC BRIDGES. THE BRIDGE CAN BE APPLIED
IN A NUMBER OF WAYS. THE AUTHORS ARE USING IT TO DETERMINE THE
KINETIC INDUCTANCE, PENETRATION DEPTH AND CRITICAL CURRENT OF
THIN FILM CIRCUITS. THE BRIDGE IS PARTICULARLY ADAPTED TO
MEASURING THE QUANTUM PHASE DIFFERENCE VS CURRENT OF
CURRENT-DEPENDENT INDUCTANCES, SUSCEPTIBILITY AND PRECISION
MEASUREMENTS OF INDUCTANCE. ARE OTHER POSSIBLE APPLICATIONS.
ALTHOUGH THE BRIDGE WAS DEVELOPED TO MEASURE SMALL
INDUCTANCES, THE PRINCIPLE CAN BE EASILY APPLIED TO LARGER
INDUCTANCES AND MAY BE USEFUL IN LARGE SCALE APPLICATIONS (B
Ref)

DESCRIPTORS: SUPERCONDUCTING DEVICES; BRIDGE INSTRUMENTS;
INDUCTANCE MEASUREMENT
1. ELECTRONICS 2. PHYSICS 3. MAGNETISM 4. SUPERCONDUCTIVITY 5. MEASUREMENT

782138 B7525113
MINIATURE PLANE MICROWAVE ANTENNA
WIESBECK, W.
ATG-TELEFUNKEN, ULM, GERMANY
NACHRICHTENTECH. Z. (NTZ) (GERMANY) VOL.28, NO.5 156-9
MAY 1975 Code: NAZEA
THIS MICROSTRIP ANTENNA IS PRODUCED IN THICK- OR THIN-FILM
TECHNIQUES ON ALUMINIUM CERAMIC SUBSTRATES. THE RADIATING
ELEMENT IS A SQUARE METALLISED SPOT, THE SIDES BEING $\lambda/2$.
COUPLING IS ACCOMPLISHED BY A COAXIAL LINE THROUGH A HOLE IN
THE SUBSTRATE. LINEAR AND CIRCULAR POLARISATION ARE POSSIBLE.
BOTH IMPEDANCE AND CENTER FREQUENCY CAN BE MATCHED BY LASER OR
ABRASIVE TRIMMING. IN THE PLANE OF THE SUBSTRATE THE ANTENNA
DIAGRAM IS ROTATIONAL SYMMETRIC, WHILE THE VERTICAL DIAGRAM IS
CARDIAL. THE GAIN IS BETWEEN -3 AND +3 DB (6 Refs)
Descriptors: MICROWAVE ANTENNAS; ANTENNA RADIATION PATTERNS;
STRIP LINE COMPONENTS; PRINTED CIRCUITS
Identifiers: MINIATURE ANTENNA; PRINTED CIRCUIT ANTENNA;
THIN FILM CIRCUIT; ANTENNA GAIN; THIN FILM CIRCUIT; ANTENNA
RADIATION PATTERNS; HALF WAVELENGTH SQUARE ANTENNA; COAXIAL
LINE COUPLED; EXPERIMENTAL RESULTS; LINEAR POLARISATION; PLANE
MICROWAVE ANTENNA; MICROSTRIP ANTENNA; ALUMINIUM CERAMIC
SUBSTRATES; SQUARE METALLISED SPOT; CIRCULAR POLARISATION;
TRIMMING
02
Section Class Codes: B3232, B3290
Unified Class Codes: ENOGAH, ENMAAM
Language: GERMAN

781510 97524539
DESIGN OF A 1.3-1.7 GHZ THIN-FILM HYBRID AMPLIFIER WITH
OPTIMUM PERFORMANCE AT A LOW COST
CHI-CHIA HSIEH; SHU-PARK CHAN
UNIV. SANTA CLARA, CALIF., USA
PARKER, S.R.;
NAVAL POSTGRADUATE SCHOOL, UNIV. SANTA CLARA, IEEE, ET AL
8TH ASILomar CONFERENCE ON CIRCUITS, SYSTEMS AND COMPUTERS
320-31 1975
3-5 DEC. 1974 PACIFIC GROVE, CALIF., USA
WHEN PERIODICALS NORTH HOLLYWOOD, CALIF., USA
DESCRIBES THE DESIGN OF A LOW-NOISE THIN-FILM HYBRID
AMPLIFIER AT A FREQUENCY RANGE OF 1.3 TO 1.7 GHZ WITH THE
EMPHASIS ON OPTIMIZING ITS PERFORMANCE AT A VERY LOW COST. THE
DESIGN OBJECTIVES WERE ACHIEVED WITH A MINIMUM NUMBER OF
CIRCUIT ELEMENTS AND A LOW-COST MICROWAVE TRANSISTOR CHIP. BY
APPLYING A SENSITIVITY ANALYSIS BEFORE OPTIMIZING THE CIRCUIT,
THE NUMBER OF ITERATIONS IN THE OPTIMIZATION ROUTINE WERE
GREATLY REDUCED. THE RESULT OF THIS WORK POINTS OUT A NEW
MICROWAVE CIRCUIT DESIGN PHILOSOPHY, INSTEAD OF MERELY
DESIGNING A CIRCUIT WITH OPTIMUM PERFORMANCE. ONE SHOULD ALSO
MAKE CERTAIN THAT THE CIRCUIT IS PRACTICAL ONE WHICH CAN BE
MANUFACTURED AT A LOW COST (7 Refs)
Descriptors: THIN FILM CIRCUITS; HYBRID INTEGRATED CIRCUITS;
SENSITIVITY ANALYSIS; DESIGN

Identifiers: 1.3 TO 1.7 GHZ; THIN FILM HYBRID AMPLIFIER;
OPTIMUM PERFORMANCE; LOW COST; SENSITIVITY ANALYSIS; MICROWAVE
CIRCUIT DESIGN PHILOSOPHY

06
Section Class Codes: B2540, B1820, B1840, B2524
Unified Class Codes: SMEAAB, ETEAAB, ETHAAB, SMCEAH

781509 B7524539
COMPARATIVE CHARACTERISTICS OF THE ELECTRICAL-PHYSICAL
PROPERTIES OF COPPER ALLOYS IN THE VACUUM CONDENSATE STATE AND
THE SOLID STATE

PERAYAKOV, V.G.; POPOV, V.I.; SIDORENKO, S.I.
RADIOELEKTRONIKA, KHARKOV (USSR) NO.29 59-65 1974
Code: RIKHAJ

DATA ARE OBTAINED ON THESE PROPERTIES OF A NUMBER OF
CU-BASED ALLOYS AND VACUUM CONDENSATES OF THOSE ALLOYS IN
ORDER TO ASSESS THEIR SUITABILITY FOR USE AS CONTACT AREAS
CONDUCTING BUSBARS AND RESISTORS IN HYBRID-FILM MICROCIRCUITS
(9 Refs)

Descriptors: HYBRID INTEGRATED CIRCUITS; THIN FILM CIRCUITS;
ELECTRICAL CONDUCTIVITY OF SOLID METALS AND ALLOYS; COPPER
ALLOYS

Identifiers: HYBRID IC; ELECTRICAL PROPERTIES; PHYSICAL
PROPERTIES; COPPER ALLOYS; VACUUM CONDENSATE; SOLID STATE;
CONTACT AREAS; CONDUCTING BUSBARS; RESISTORS

02
Section Class Codes: B2540, B2524
Unified Class Codes: SMEAAB, SMCEAH
Language: RUSSIAN

781588 B7524537
THICK-FILM HYBRIDS-WHAT THEY CAN OFFER
METHERINGTON, D.R.
NEWARKET TRANSISTORS LTD., ENGLAND
NEW ELECTRON. (GB) VOL. 8, NO. 6 64, 67-8 18 MARCH 1975
Codon: NAEELAC
HYBRID MICROCIRCUITS HAVE BECOME ESTABLISHED IN A WIDE RANGE OF APPLICATIONS. MILITARY AND AEROSPACE, MEDICAL, PROFESSIONAL, INDUSTRIAL COMMUNICATIONS, AUTOMOTIVE AND COMPUTER, THEY ARE USED TO COMPLEMENT THE USE OF I.C.'S IN PRODUCING THE RESISTOR NETWORKS AND SOME INTERCONNECTOR PATTERNS. THE HYBRID CIRCUIT HAS DEVELOPED NEW MARKET FEATURES, INSTEAD OF BEING A COMPONENT IN A P.C.B. IT HAS BECOME A COMPLETE ASSEMBLY. BESIDES THE ECONOMIC COMPARISONS, AN EQUIPMENT DESIGNER WHEN CONSIDERING THE USE OF THICK FILM CIRCUITS MUST CONSIDER THE BENEFITS HE GAINS FROM IMPROVED RELIABILITY, IMPROVED PRODUCT CONSISTENCY, REDUCED FUNCTION VOLUME, AND SIMULATION OF NEW DESIGN IDEAS.
Descriptores: THICK FILM CIRCUITS; HYBRID INTEGRATED CIRCUITS
Identifiers: THICK FILM HYBRID CIRCUITS; RELIABILITY; PRODUCT CONSISTENCY; REDUCED FUNCTION VOLUME
02
Section Class Codes: B2540, B2522
Unified Class Codes: SMEAAB, SMCEAH

781584 B7524533
THE PRODUCTION OF HYBRID CIRCUITS FOR THE DEVELOPMENT OF ELECTRONIC EQUIPMENT
SALEWSKI, G.
FERMELEDETECHNIK (GERMANY) VOL. 15, NO. 1 15-18 13 FEB. 1975
Codon: FERNRG
TECHNIQUES OF MANUFACTURING HYBRID CIRCUITS ARE BRIEFLY REVIEWED. THE IMPORTANCE OF ECONOMICAL CONSIDERATIONS IS STRESSED WITH REGARD TO CHANGE FROM CONVENTIONAL TO THIN FILM CIRCUITS. A BETTER CHOICE IS OFFERED BY THE USE OF HYBRID CIRCUITS, WHICH MAKE USE OF ENCAPSULATED IC'S AND TRANSISTOR CHIPS. (4 Refs)
Descriptores: INTEGRATED CIRCUIT PRODUCTION; HYBRID INTEGRATED CIRCUITS
Identifiers: ENCAPSULATED IC; PRODUCTION OF HYBRID CIRCUITS; IMPORTANCE OF ECONOMICAL CONSIDERATIONS; THIN FILM CIRCUITS
02
Section Class Codes: B2540
Unified Class Codes: SMEAAB
Language: GERMAN

781582 B7524531
TECHNOLOGICAL PRODUCTION LINE FOR THIN FILM HYBRID PHOTOLITHOGRAPHY PROCESSING
ROKAN, W.; SHOLSKI, R.

ELEKTRONIKA (POLAND) VOL. 16, NO. 3 97-101 1975 Codon: EKNIDZ
DESCRIBES THE CONSTRUCTION, WORKING PRINCIPLE AND PRACTICAL EXPERIENCE WITH A PHOTOLITHOGRAPHY PROCESSING PRODUCTION LINE (16 Refs)
Descriptores: THIN FILM CIRCUITS; HYBRID INTEGRATED CIRCUITS; PHOTOLITHOGRAPHY; INTEGRATED CIRCUIT PRODUCTION
Identifiers: THIN FILM CIRCUITS; HYBRID INTEGRATED CIRCUITS; INTEGRATED CIRCUIT PROCESSING; PRODUCTION LINE; PHOTOLITHOGRAPHY; CONSTRUCTION; WORKING PRINCIPLE; PRACTICAL EXPERIENCE
02
Section Class Codes: B2540, B2524
Unified Class Codes: SMEAAB, SMCEAH
Language: POLISH

781525 B7524447
PERFORMANCE CHARACTERISTICS OF UNIFORM THIN-FILM RESISTIVE-CAPACITIVE-RESISTIVE STRUCTURES
KAMAL, A.K.; AHMED, K.U.; AGARWAL, R.P.; SINHA, H.P.
UNIV. ROORKEE, INDIA
MICROELECTRONICS (GB) VOL. 6, NO. 1 6-10 SEPT. 1974
Codon: MICE99
PERFORMANCE CHARACTERISTICS OF A FEW SPECIMEN OF UNIFORM THIN FILM STRUCTURES, EACH CONSISTING OF TWO RESISTIVE LAYERS OF DIFFERENT PER-UNIT-LENGTH RESISTANCE SEPARATED FROM ONE ANOTHER BY A DIELECTRIC LAYER ARE EVALUATED BOTH THEORETICALLY AND EXPERIMENTALLY. THE EXPERIMENTAL RESULTS AGREE FAIRLY WELL WITH THE THEORETICAL COUNTERPARTS WITHIN THE BOUNDS OF EXPERIMENTAL ERRORS. THE EFFECT OF VARYING THE LOAD ON THE PERFORMANCE CHARACTERISTICS IS OBSERVED EXPERIMENTALLY AND THE RESULTS ARE FOUND TO CONFORM TO THOSE REPORTED EARLIER. THE EXISTENCE OF A NULL FREQUENCY SHOWN BY THE NUMERICAL ANALYSIS OF A LOW PASS FILTER CONFIGURATION OF THE UNIFORM THIN FILM STRUCTURE IS ALSO CONFIRMED BY EXPERIMENTAL OBSERVATIONS (8 Refs)

Descriptores: THIN FILM CIRCUITS; INTEGRATED CIRCUIT PRODUCTION; DISTRIBUTED PARAMETER NETWORKS
Identifiers: THIN FILM DISTRIBUTED NETWORK; PERFORMANCE CHARACTERISTICS; THIN FILM RESISTIVE LAYERS; DIELECTRIC LAYER
1. NULL FREQUENCY; NUMERICAL ANALYSIS; LOW PASS FILTER CONFIGURATION; UNIFORM THIN FILM STRUCTURE

02
Section Class Codes: B2524
Unified Class Codes: SMCEAH

781525 B7524446
EVOLUTION OF THE CHROMIUM-GOLD THIN FILM METALLIZATION
THALER, R.K.
SANDIA LABS., ALBUQUERQUE, N.MEX., USA
J. VAC. SCI. AND TECHNOL. (USA) VOL.12, NO.1 27
JAN.-FEB. 1975 Coden: JVSTAL
ABSTRACT ONLY GIVEN, IN WHICH SELECTION, IMPLEMENTATION AND
LIMITATIONS OF THE METALLIZATION SYSTEM ARE MENTIONED (3
Refs)
Descriptors: THIN FILMS; CHROMIUM; GOLD; METALLISATION; THIN
FILM CIRCUITS
Identifiers: CR-AU FILM METALLISATION; EVOLUTION
02
Section Class Codes: B2524
Unified Class Codes: SMCEAH

781524 B7524445
ELECTRICAL RESISTANCE OF METALLIZED VIA HOLES
HALL, P.M.
BELL TELEPHONE LABS., ALLENTOWN, PA., USA
J. VAC. SCI. AND TECHNOL. (USA) VOL.12, NO.1 88-91
JAN.-FEB. 1975 Coden: JVSTAL
21ST NATIONAL SYMPOSIUM OF THE AMERICAN VACUUM SOCIETY
8-11 OCT. 1974 ANAHEIM, CALIF., USA
THE RESISTANCE OF HOLES DRILLED BY LASER THROUGH ALUMINA
SUBSTRATES AND THE COATED BY EVAPORATION IS CONSIDERED
ANALYTICALLY. THE GEOMETRY IS TAKEN LOCALLY AS A CONICAL HOLE.
THE EFFECTS OF FOUR-POINT PROBE TECHNIQUES ARE DISCUSSED AND A
THEORETICAL EXPRESSION BASED ON CONFORMED MAPPING TECHNIQUES
IS GIVEN. THE CASES OF TIPD AND TIPDAU FILMS ARE DISCUSSED.
THE MUCH HIGHER RESISTANCE WITHIN THE HOLE IS ATTRIBUTED TO
NON-PERPENDICULAR INCIDENCE AND NOT TO SURFACE IRREGULARITIES
(2 Refs)
Descriptors: METALLISATION; THIN FILM CIRCUITS; ELECTRICAL
CONDUCTIVITY; METALLIC THIN FILMS
Identifiers: METALLIZED VIAHOLES; AL/SUB 270/SUB 3/ SUBSTRATE
FILM; TIPDAU FILM; LASER DRILLED VIAHOLE; ELECTRICAL
RESISTANCE
01
Section Class Codes: B2524
Unified Class Codes: SMCEAH

781523 B7524444
THIN FILM METALLIZATION AND PATTERN GENERATION TECHNIQUES
FRAHN, A.
BELL TELEPHONE LABS., INC., ALLENTOWN, PA., USA
INTERNAT. UNION FOR VACUUM SCI., TECHNIQUE AND APPLICATIONS
JAP. J. APPL. PHYS. (JAPAN) SUPPL.2, PT.1 A-857 1974
PROCEEDINGS OF THE 6TH INTERNATIONAL VACUUM CONGRESS 25-29

MARCH 1974 KYOTO, JAPAN
ABSTRACT ONLY GIVEN, SUBSTANTIALLY AS FOLLOWS. DESCRIBES
SOME DEVELOPMENTS IN SUBSTRATE METALLIZATION AND
INVESTIGATIONS OF CONDUCTOR SYSTEM PROPERTIES, INCLUDING
SUBSTRATES WITH VIA-HOLES, AND EVAPORATED VS SPUTTERED METAL
FILMS. NEXT THE PROPERTIES OF THIN FILM CONDUCTORS DEPOSITED
BY SELECTIVE PLATING OF GOLD ON TIPD METALLIZATIONS ARE
OUTLINED, AND FINALLY THE APPLICATION AND CHARACTERIZATION
CONDITIONS FOR THIN FILM PHOTORESISTS ARE SHOWN WHICH PERMIT
THE GENERATION OF FINE LINE CONDUCTORS WITH +0.2-2.5 μm
TOLERANCE. IT IS CONCLUDED THAT THE INTERCONNECTION DENSITY
AND PRECISION ACHIEVABLE BY THIS TECHNOLOGY ARE ADEQUATE TO
MEET THE REQUIREMENTS FOR THE PRESENT AND AT LEAST NEAR FUTURE
NEEDS OF THIN FILM CIRCUIT TECHNOLOGY
Descriptors: METALLISATION; INTEGRATED CIRCUIT PRODUCTION;
HYBRID INTEGRATED CIRCUITS; THIN FILM CIRCUITS
Identifiers: THIN FILM METALLIZATION; HYBRID INTEGRATED
CIRCUITS; PATTERN GENERATION TECHNIQUES; THIN FILM
PHOTORESISTS; THIN FILM CONDUCTORS; INTERCONNECTION DENSITY;
PRECISION; THIN FILM CIRCUIT TECHNOLOGY
06
Section Class Codes: B2524, B2540, B2528
Unified Class Codes: SMCEAH, SMEAAB, SMCKAK

781521 B7524442
TEMPERATURE COMPENSATED RC-ACTIVE NETWORKS IN THICK FILM
TECHNOLOGY
KALLFAS, T.
INST. NETZWERK SYSTEMTHEORIE, DER UNIV. STUTTGART, GERMANY
Coden: F0NZ33 VOL.29, NO.5 147-51 MAY 1975
FREIHERZ (GERMANY)
AN IMPORTANT CONDITION FOR THE MANUFACTURE OF COMMUNICATION
FILTERS IN THICK FILM TECHNOLOGY IS A LOW TEMPERATURE
COEFFICIENT OF THE TIME CONSTANTS EXHIBITED BY THE INTEGRATED
RC'S. THIS PROBLEM CAN BE SOLVED BY MATCHING THE
TEMPERATURE COEFFICIENTS OF RC'S AND C'S. IT IS POSSIBLE TO
ADJUST THE TCC TO THE GIVEN TCC BY BLENDING TWO DIELECTRIC
COMPOSITIONS. TEST RESULTS OF A TWIN-T-NETWORK AND A RC-ACTIVE
LOWPASS FILTER OF 7TH DEGREE ARE GIVEN WHICH DEMONSTRATE THAT
THICK FILM CIRCUITS CAN ATTAIN THE LOW TEMPERATURE SENSITIVITY
OF THIN FILM CIRCUITS (4 Refs)
Descriptors: ACTIVE FILTERS; THICK FILM CIRCUITS
Identifiers: RC ACTIVE NETWORK; TEMPERATURE COMPENSATED;
THICK FILM TECHNOLOGY
02
Section Class Codes: B2524, B1880
Unified Class Codes: SMCEAH, ETRAAM

781520 07524441
THIN FILM CIRCUITS USING TANTALUM TECHNIQUES
WILLER, S.
ELECTRON. IND. (GERMANY) VOL.6, NO.1-2 EPI-4 JAN.-FEB.
1975 Codon: EWIDAT
THE ADVANTAGES OF TANTALUM IN THIN FILM CIRCUITS, COMPARED
TO NICKEL/CHROME, IS THAT RESISTORS ARE EASILY ADJUSTED BY
ANODIC OXIDATION, AND THE RESULTING OXIDE LAYER ALSO ACTS AS A
GOOD PASSIVATOR. CAPACITORS WITH TANTALUM OXIDE DIELECTRIC
ALSO SHOW ADVANTAGES BY GREATLY INCREASED PACKING DENSITY. THE
ARTICLE DESCRIBES PROCESSING AND CHARACTERISTICS OF TANTALUM
THIN FILM CIRCUITS, AS WELL AS A SHORT REVIEW OF THE PRESENT
TECHNOLOGICAL STATUS. (20 Refs)
Descripton: THIN FILM CIRCUITS; THIN FILM DEVICES; REVIEWS;
TANTALUM
Identifiers: TA TECHNOLOGY; TA/SUB 2/O/SUB 5/; THIN FILM
CIRCUITS; RESISTORS; ANODIC OXIDATION; PASSIVATOR; CAPACITORS;
PACKING DENSITY; PROCESSING
02
Section Class Codes: B2524
Unified Class Codes: SMCEAH
Language: GERMAN

781519 07524440
MULTILAYER THICK FILMS
NICKS, J.
NEW ELECTRON. (GB) VOL.8, NO.6 72 18 MARCH 1975
Codon: NWELEC
THE MANUFACTURING TECHNIQUES FOR THICK FILM CIRCUITS ARE
REVIEWED TOGETHER WITH THEIR APPLICATIONS IN INDUSTRY,
OPTOELECTRONICS AND INSTRUMENTATION
Descripton: THICK FILM CIRCUITS
Identifiers: MULTILAYER THICK FILMS
02
Section Class Codes: B2522
Unified Class Codes: SMCEAH

781518 07524439
THIN AND THICK FILM FOR PROFESSIONAL AND MILITARY
APPLICATIONS
BYSWELL, D.
JIT COMPONENTS GROUP EUROPE, HARLOW, ENGLAND
NEW ELECTRON. (GB) VOL.8, NO.6 54-5 18 MARCH 1975
Codon: NWELEC
THE FUTURE OF MULTI-CHIP FILM CIRCUIT TECHNOLOGY FOR
PROFESSIONAL AND MILITARY USE CAN BE SUMMARISED AS: (1) THE
DIFFERENCE IN PRECISION AND STABILITY BETWEEN THIN AND THICK
FILMS IS NARROWING; (2) MAJOR CHANGES ARE EXPECTED IN ASSEMBLY
AND ENCAPSULATION METHODS; (3) DEVELOPMENT OF
COMPUTER-CONTROLLED AUTOMATIC METHODS OF MANUFACTURE OF
COMPLEX MULTI-CHIP CIRCUITS; (4) MONOLITHIC CIRCUIT CHIPS AND
FILM TECHNOLOGY PROVIDES A BASIS FOR FUTURE ELECTRONIC

EQUIPMENT
Descripton: THICK FILM CIRCUITS; THIN FILM CIRCUITS; HYBRID
INTEGRATED CIRCUITS
Identifiers: MULTICHIP FILM CIRCUITS; THIN FILM CIRCUITS;
PROFESSIONAL APPLICATIONS; THICK FILM; MILITARY APPLICATIONS;
PRECISION; STABILITY; ASSEMBLY; ENCAPSULATION; MONOLITHIC
CIRCUIT CHIPS
02
Section Class Codes: B2522, B2524, B2540
Unified Class Codes: SMCEAH, SMCEAH, SWEAAB

781125 07524029
ADVANCES IN SUPERCONDUCTING QUANTUM ELECTRONIC MICROCIRCUIT
FABRICATION
KIRSCHMAN, R.K.; NOTARIS, H.A.; MERCEREAU, J.E.
JET PROPULSION LAB., PASADENA, CALIF., USA
AMERICAN PHYS. SOC., 1EE, ARGONNE NAT. LAB., ET AL
IEEE TRANS. MAGN. (USA) VOL. MAG-11, NO.2 77B-81 MARCH
1975 Codon: JETDGO
1974 APPLIED SUPERCONDUCTIVITY CONFERENCE 30 SEPT. - 2
OCT. 1974 ARGONNE, ILL., USA
STANDARD MICROELECTRONIC FABRICATION TECHNIQUES HAVE BEEN
UTILIZED TO PRODUCE BATCH QUANTITIES OF SUPERCONDUCTING
QUANTUM ELECTRONIC DEVICES AND CIRCUITS. THE OVERALL GOAL IS A
FABRICATION TECHNOLOGY YIELDING CIRCUITS THAT ARE RUGGED AND
STABLE AND CAPABLE OF BEING FABRICATED CONTROLLABLY AND
REPRODUCIBLY IN SIZEABLE QUANTITIES. PROGRESS TOWARD THIS GOAL
IS PRESENTED, WITH PRIMARY EMPHASIS ON THE MOST RECENT WORK,
WHICH INCLUDES THE USE OF ELECTRON-BEAM LITHOGRAPHY AND
TECHNIQUES OF HYBRID MICROELECTRONICS. SEVERAL PROTOTYPE
MICROCIRCUITS HAVE BEEN SUCCESSFULLY FABRICATED. THESE
MICROCIRCUITS ARE FORMED IN A THIN-FILM PARENT MATERIAL
CONSISTING OF LAYERS OF SUPERCONDUCTING AND NORMAL METALS, AND
USE PROXIMITY-EFFECT STRUCTURES AS THE ACTIVE CIRCUIT ELEMENTS
(12 Refs)

Descripton: INTEGRATED CIRCUIT PRODUCTION; HYBRID
INTEGRATED CIRCUITS; SUPERCONDUCTING DEVICES; THIN FILM
CIRCUITS
Identifiers: ELECTRON BEAM LITHOGRAPHY; SUPERCONDUCTING
QUANTUM ELECTRONIC MICROCIRCUIT FABRICATION; HYBRID
MICROELECTRONICS
06
Section Class Codes: B2340, B2524, B2540
Unified Class Codes: SCAAL, SMCEAH, SWEAAB

DIALOG File13: INSPEC-ELEC & COMPUT 69-77/15517 (COPR. I.E.E.) (Item 335 of 388) User 674 28Oct77

781022 B7523920
REVIEW OF THE MARKET FOR P.C.B. AND FILM CIRCUITS
SCHEMILT, H.R.
NEW ELECTRON. (GB) VOL.8, NO.6 41-2 18 MARCH 1975
Codon: NRELAC
REVIEWS THE MARKET FOR PRINTED CIRCUITS, THICK AND THIN
MICROCIRCUITS, THIN AND THICK FILM HYBRIDS
Descriptiors: REVIEWS: PRINTED CIRCUITS; THICK FILM CIRCUITS;
THIN FILM CIRCUITS; HYBRID INTEGRATED CIRCUITS
Identifiers: PCB CIRCUITS; PC LAMINATE; THIN FILM
MICROCIRCUIT; THICK FILM MICROCIRCUIT; HYBRID IC; REVIEW; FILM
CIRCUITS

02
Section Class Codes: B2230, B2522, B2524, B2540
Unified Class Codes: SEMAAM, SMCCAX, SMCEAH, SMEAAB

7974 Codon: HIRAG
THE PROCESS OF DESIGNING THICK FILM RESISTORS, THEIR WIRING
AND TOPOLOGY IS DESCRIBED, AN EXAMPLE ILLUSTRATES THE COURSE
OF THE DESIGN AND THE MAIN CONSTRUCTIONAL PROBLEMS. A COMPUTER
PROGRAMME WAS DEVELOPED FOR THE CORRECT TECHNOLOGICAL DESIGN
OF THICK FILM RESISTORS. THIS PROGRAMME IS DESCRIBED (3
Refs)

Descriptiors: HYBRID INTEGRATED CIRCUITS; THICK FILM CIRCUITS
; TOPOLOGY; WIRING; COMPUTER-AIDED CIRCUIT DESIGN; THICK FILM
RESISTORS

Identifiers: THICK FILM HYBRID INTEGRATED CIRCUITS; COMPUTER
PROGRAM; COMPUTER AIDED DESIGN; DESIGN; THICK FILM RESISTORS;
WIRING; TOPOLOGY

02
Section Class Codes: B2522, B2540, C8842
Unified Class Codes: SMCCAX, SMEAAB, WMEEAQ
Language: HUNGARIAN

772755 B7519077, C7514688

COMPUTER-AIDED DESIGN OF THIN-FILM ANODIZATION FIXTURES
DICKERSON, P.J.
BILL LAB., HAWTHORNE, NEW, USA
WISTEIN ELECTRIC ENG. (USA) VOL.19, NO.1 24-9 JAN.
1975 Codon: WELAX

THE USE OF A COMPUTER TO PERFORM THE DRAFTING FUNCTIONS
REQUIRED IN THE DESIGN OF THIN-FILM ANODIZATION FIXTURES HAS
REDUCED DESIGN AND DRAFTING TIME BY 24 DAYS, OR 96 PERCENT.
FIXTURE CONSTRUCTION TIME HAS BEEN REDUCED BY TWO DAYS, OR 10
PERCENT, BECAUSE THE PRINTOUT PREPARED BY THE COMPUTER IS MORE
ACCURATE AND EASIER TO USE THAN THE DRAWINGS PREPARED BY A
DRAWINGMAN. THE REDUCTION IN CONSTRUCTION TIME HAS LED TO A
10-PERCENT REDUCTION IN THE COST OF THE FIXTURE. WITH THE
COMPUTER-AIDED DESIGN AND DRAFTING PROCESS, THE PRODUCT
ENGINEER PREPARES DETAILED INFORMATION ABOUT DIMENSIONS,
CIRCUITS, PROBES, CABLES AND OTHER DESIGN FACTORS. THE
COMPUTER USES THIS INFORMATION TO FURNISH SOME 30 PAGES OF
FIXTURE DESIGN INFORMATION CONSISTING OF A PROBE-PLATE
DRAWING INFORMATION LIST, A WIRING INFORMATION LIST, AND AN
OVERVIEW CABLE INTERFACE LIST. THESE LISTS ARE USED TO
CONSTRUCT AND MAINTAIN THE FIXTURE

Descriptiors: INTEGRATED CIRCUIT PRODUCTION; THIN FILM
CIRCUITS; ELECTRONICS APPLICATIONS OF COMPUTERS;
COMPUTER-AIDED DESIGN; OXIDATION
Identifiers: CAD; THIN FILM ANODISATION FIXTURES; INTEGRATED
CIRCUIT PRODUCTION; THIN FILM FUNCTIONS; DRAUGHTING; INTEGRATED
DESIGN FACTORS

02
Section Class Codes: B2524, C8842, B1269
Unified Class Codes: SMCEAH, WMEEAQ, ADGMAE

772713 B7519069, C7514643

DESIGN OF THICK FILM INTEGRATED CIRCUITS (RESISTORS)
RIPKA, G.; PAPP, K.; ALBRECHT, M.
BITE ELEKTROHAIKAI TECHNOLOGIA TANSZEK, HUNGARY

771029 B7519068, C7513671
TOWARDS A BETTER UNDERSTANDING OF SCREEN PRINT THICKNESS
CONTROL

HORWOOD, R.J.
BAC, BRISTOL, ENGLAND
ELECTROCOMPON, SCI. AND TECHNOL. (GB) VOL.1, NO.2 129-36
DEC. 1974 Codon: ECSTCS

IN RECENT YEARS, A MORE SCIENTIFIC APPROACH TO THE AGE-OLD
CRAFT OF SILK SCREEN PRINTING HAS RESULTED IN THE EVOLUTION OF
COMPLEX PRECISION-BUILT PRINTING MACHINES FOR USE IN THE
ELECTRONICS MICRO-CIRCUIT INDUSTRY. EVEN SO, KNOWLEDGE OF THE
PHYSICAL PROCESSES INVOLVED IN SCREEN PRINTING IS STILL FAR
FROM COMPLETE. AN ATTEMPT IS MADE HERE TO PROVIDE A BETTER
UNDERSTANDING OF THE SCREEN PRINTING MECHANISM AND MORE
SPECIFICALLY OF PRINT THICKNESS CONTROL. TWO DIFFERENT
PRINTING MODES ARE DESCRIBED AND THE EFFECT OF AN INTERACTION
BETWEEN SOME OF THE MORE IMPORTANT MACHINE PARAMETERS IN THIS
RESPECT ARE DISCUSSED. A SIMPLE PILLAR THEORY IS OFFERED WHICH
ALLOWS A PREDICTION TO BE MADE OF THE QUANTITY OF INK
FUNDAMENTALLY DEPOSITED BY A GIVEN SCREEN (3 Refs)

Descriptiors: INTEGRATED CIRCUIT PRODUCTION; HYBRID
INTEGRATED CIRCUITS; PRODUCTION CONTROL; THICKNESS CONTROL;
THICK FILM CIRCUITS

Identifiers: PRECISION BUILT PRINTING MACHINES; ELECTRONICS
MICROCIRCUIT INDUSTRY; THICK FILMS; SCREEN PRINT THICKNESS
CONTROL; SILK SCREEN PRINTING; SIMPLE, PILLAR THEORY; QUANTITY
OF INK; HYBRID MICROCIRCUITS

02
Section Class Codes: B2522, C7862, C7441, B2540
Unified Class Codes: SMCCAX, VMMEAE, VGECAF, SMEAAB

AD-A062 407

ROCKWELL INTERNATIONAL ANAHEIM CA ELECTRONIC DEVICES DIV F/6 9/3
HYBRID TECHNOLOGY COST REDUCTION IMPROVEMENT SUDY PROGRAM. VOLU--ETC(U)
APR 78 N00163-77-C-0299

UNCLASSIFIED

C78-299/501-VOL-2

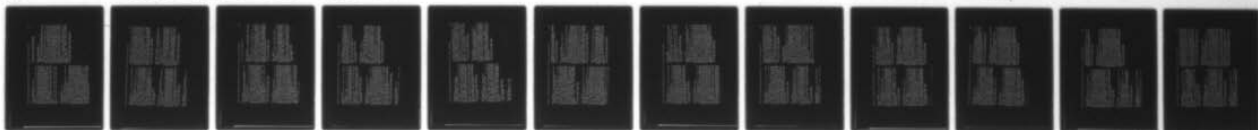
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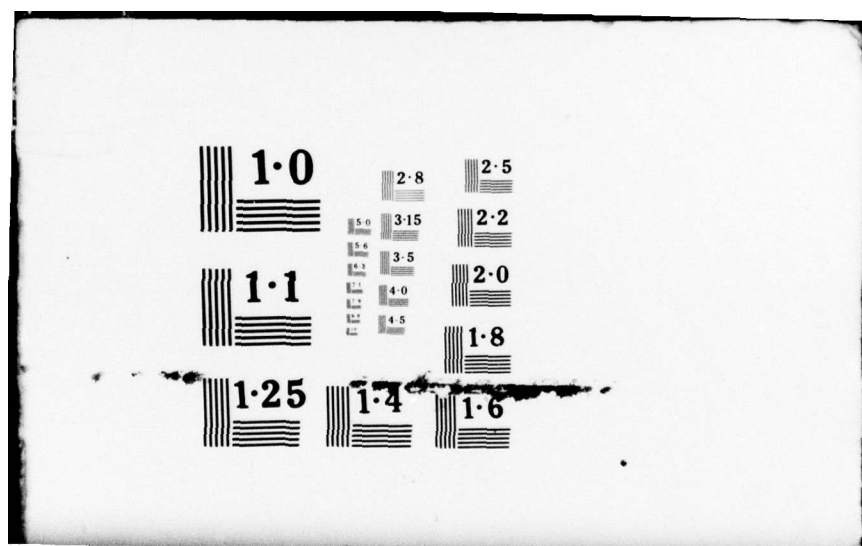
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771R26 B7519973. C7513670
GALVANOMETER CONTROLLED LASER TRIMMING
CUZZENS, W.
ELECTRON (GB) NO.66 37, 38, 40 16 JAN. 1975 Coded:

ELT'CL
GREAT DEVELOPMENT EFFORT HAS BEEN SPENT IN RECENT YEARS IMPROVING THE TECHNIQUES OF MANUFACTURING FILM RESISTORS AND FILM HYBRID CIRCUITS. ONE AREA, THE TRIMMING PROCESS, HAS SEEN ESPECIALLY SIGNIFICANT IMPROVEMENT IN COST, REDUCTION AND AUTOMATION. TWO MAJOR FACTORS CONTRIBUTED TO THIS IMPROVEMENT: THE SUCCESSFUL APPLICATION OF THE LASER AS A TRIMMING TOOL AND THE INVENTION OF THE GALVANOMETER BEAM POSITIONER. BECAUSE OF THESE AND OTHER ADVANCES, TRIMMING NEED NO LONGER BE THE SLOWEST AND MOST COSTLY PART OF THE PRODUCTION PROCESS.
D-SCriptors: THIN FILM RESISTORS; THIN FILM CIRCUITS; LASER BEAM MACHINING; POSITION CONTROL; GALVANOMETERS; INTEGRATED CIRCUIT PRODUCTION
I-ntentifiers: LASER TRIMMING; FILM HYBRID CIRCUITS; COST REDUCTION; AUTOMATION; GALVANOMETER BEAM POSITIONER; FILM RESISTORS

02
Section Class Codes: B2524, B2210, B2980, B1267, C7862.
C7441
Unified Class Codes: SMCEAH, SEEAAS, EGMAAA, ADGKAT, VMWEAE, VGECAF

768105 B7519942
FILM HYBRID CIRCUITS FOR LSI
HARWOOD, G.
MILLARD LTD., MITCHAM, ENGLAND
ALARD LECTURE SERIES NO.75 CUSTOM DESIGN FOR LARGE SCALE INTEGRATION (LSI) 4/1-16 1975
21-25 APRIL 1975 LONDON, ENGLAND
ALARD, MICHELLE SUR SEINE, FRANCE

CONSIDERS BOTH THICK AND THIN FILM HYBRID TECHNOLOGIES FOR USE WITH LSI DEVICES. MATERIALS USED FOR THE PASSIVE PART OF THE CIRCUIT AND THEIR PROPERTIES ARE CONSIDERED WITH REGARD TO INTERACTION WITH BONDING MATERIALS. TYPES OF INTEGRATED AND ATTACHED COMPONENTS ARE DISCUSSED WITH PARTICULAR REFERENCE TO RESISTORS, CAPACITORS AND SEMI-CONDUCTORS. MATERIALS AND TECHNIQUES USED FOR ATTACHING COMPONENTS TO THE FILM CIRCUIT ARE INDICATED AND A SELECTION OF THOSE MOST LIKELY TO GIVE LONG SERVICE AND GOOD PERFORMANCE ARE MADE. THE EFFECTS OF ENVIRONMENTAL TREATMENT AND OF PACKAGING IN VARIOUS WAYS ARE CONSIDERED AND THE MOST SUITABLE WAYS OF PROTECTING THE COMPONENTS SENSITIVE TO MECHANICAL DAMAGE AND HOSTILE ENVIRONMENTS ARE SET OUT. A SUMMARY OF IMPORTANT ASPECTS OF DESIGN OF FILM HYBRIDS FOR LSI IS MADE (29 Refs)
D-SCriptors: LARGE SCALE INTEGRATION; THICK FILM CIRCUITS; THIN FILM CIRCUITS; HYBRID INTEGRATED CIRCUITS
I-ntentifiers: THIN FILM CIRCUITS; LARGE SCALE INTEGRATION; SEMI-CONDUCTORS; FILM HYBRID CIRCUITS; THIN FILM HYBRID TECHNOLOGIES; RESISTORS; CAPACITORS; FILM CIRCUIT; PACKAGING; EFFECTS OF ENVIRONMENTAL TREATMENT

06
Section Class Codes: B2540, B2524, B2522
Unified Class Codes: SMEAAB, SMCEAH, SMCCAX

768491 A7535338, B7519938
THIN-FILM CRYOGENIC AMPLIFIER
KRAMER, G.
AERODJET ELECTROSYSTEMS CO, AZUSA, CALIF., USA
INTERNAT. UNION FOR VACUUM SCI., TECHNIQUE AND APPLICATIONS
JAP., J. APPL. PHYS. (JAPAN) SUPPL.2, PT.1 B33-5 1974
Coded: JNAPAS OF THE 6TH INTERNATIONAL VACUUM CONGRESS 25-29 MARCH 1974 KYOTO, JAPAN

A THREE-STAGE AMPLIFIER, DESIGNED FOR CRYOGENIC APPLICATIONS, EMPLOYING ALL THIN-FILM COMPONENTS, I.E., THIN-FILM TRANSISTORS, THIN-FILM DIODES, THIN-FILM CAPACITORS AND THIN-FILM RESISTORS, IS DESCRIBED. THE TFTS USED IN THIS THIN-FILM INTEGRATED CIRCUIT (TIFIC) EXHIBIT SATISFACTORY STABILITY AND RELATIVELY LOW NOISE AT CRYOGENIC TEMPERATURES. AT A TEMPERATURE OF 77K, AND FREQUENCY OF 500 HZ THE AMPLIFIER EXHIBITS A VOLTAGE GAIN OF GREATER THAN 100 AND A NOISE LEVEL OF 400 NANOVOLTS/ROOT-HZ. THE FREQUENCY RANGE OF OPERATION IS 1 HZ TO 10 KHZ. AN ARRAY OF 102 DISCRETE AMPLIFIERS ARE DEPOSITED ON A TWO INCH SQUARE SUBSTRATE BY ADDITIVE EVAPORATION PROCESSES IN A SINGLE PUMPDOWN OF THE VACUUM SYSTEM. EACH AMPLIFIER CONTAINS 3 THIN-FILM TRANSISTORS, 6 THIN-FILM DIODES, 4 THIN-FILM RESISTORS AND 3 THIN-FILM CAPACITORS
D-SCriptors: CRYOGENICS; LOW-TEMPERATURE TECHNIQUES; AMPLIFIERS; THIN FILM CIRCUITS; THIN FILM TRANSISTORS
I-ntentifiers: THIN FILM IC AMPLIFIER; THREE STAGE AMPLIFIER; VACUUM SYSTEM SINGLE PUMPDOWN; CRYOGENIC APPLICATIONS; CRYOGENIC APPLICATIONS; STABILITY; LOW NOISE; ADDITIVE EVAPORATION PROCESSES

06
Section Class Codes: A0660, A0624, B2540, B1840
Unified Class Codes: B0MAAH, B0FEAJ, SMEAAB, ETHAAB

768419 87519874
PRODUCTION OF THIN FILM NETWORKS BY MEANS OF ELECTROEROSION
MICRO-ENGRAVING
ILLYEFALVI VITEZ, ZS.
B-TEK ELEKTRONIKAI TECHNIKAI TANSZER. HUNGARY
MIRASTECHNIKA (HUNGARY) VOL.25, NO.12 363-5 DEC.
1974 Coden: HIRPAG
MICRO-ENGRAVING BY ELECTROEROSION OF A THIN FILM IS A
WIDE-SPREAD METHOD OF THINNING THIN FILM RESISTORS AND
CAPACITORS OF INTEGRATED CIRCUITS. TESTS WERE MADE TO CLARIFY
THE PHYSICS OF THE ELECTROEROSION AND TO OPTIMIZE THE
PARAMETERS OF TECHNOLOGY, AS A RESULT OF FURTHER DEVELOPMENT
OF THE PROCEDURE THE QUALITY OF THE ADJUSTED ELEMENTS HAS
IMPROVED AND THE POSSIBILITY OF THE DEVELOPMENT OF A COMPLETE
TOPOLOGY OF RESISTANCE NETWORKS BY MICRO-ENGRAVING WAS
ESTABLISHED (3 Refs)
Descriptors: THIN FILM CIRCUITS; THIN FILM RESISTORS; THIN
FILM CAPACITORS; INTEGRATED CIRCUIT PRODUCTION
Identifiers: ELECTROEROSION; MICROENGRAVING; THIN FILM
CAPACITORS; PARAMETER OPTIMISATION; THIN FILM NETWORKS; THIN
FILM RESISTORS; INTEGRATED CIRCUITS; TOPOLOGY
02
Section Class Codes: B2524
Unified Class Codes: SMCEAH
Language: HUNGARIAN

768419 87519872
IMPROVEMENT OF THICK FILM CIRCUIT ELEMENT
AB Filed: 26 FEB. 1973 Assignees: ELECTRONIC COMPONENTS
PRIORITY Date: 1 MAR 1972
19 DEC. 1974
A THICK-FILM PRINTED CIRCUIT FOR USE AT RADIO FREQUENCIES
COMPREISES A SUBSTRATE HAVING PRINTED COMPONENTS ON EACH SIDE.
ONE OF THE COMPONENTS ON ONE SIDE HAVING AN EARTH AREA PRINTED
WITH CONDUCTIVE INK AND SOME OF THE COMPONENTS ON THE OTHER
SIDE OF THE SUBSTRATE BEING LOCATED DIRECTLY OPPOSITE THE
EARTH AREA. DISCRETE COMPONENTS ARE ALSO CONNECTED TO THE
PRINTED COMPONENTS. THE ARRANGEMENT MINIMIZES ALTERATION IN
THE BASIC CHARACTERISTICS OF THE CIRCUITRY BY UNWANTED
COUPLING
Descriptores: PRINTED CIRCUITS; EARTHING; THICK FILM CIRCUITS
Identifiers: THICK FILM RF PRINTED CIRCUIT; SUBSTRATE; EARTH
AREA; CONDUCTIVE INK; COUPLING
01
Section Class Codes: B2522, B2230
Unified Class Codes: SMCCAX, SEMAAB

767944 87519155
1.8 GHZ LUMPED COMPONENT THICK FILM AMPLIFIER
ALLEN, C.P.; TUCKER, C.E.; WOODCOCK, K.W.; BARNWELL, P.G.
BRISTOL POLYTECH., ENGLAND

ELECTROCOMPON. SCI. AND TECHNOL. (GB) VOL.1, NO.2 141-4
DEC. 1974 Coden: ECSTCS
TEST CIRCUITS WERE PRINTED AND MEASURED. A MICROSTRIP
LAUNCHER WAS USED TO CONNECT DIRECTLY INTO THE CIRCUIT. WHILE
A SHORTING BAR CONNECTED TO THE PLATE HOLDING LAUNCHER MADE
THE GROUND CONTACT, AS CAPACITOR VALUES OF INTEREST ARE OF THE
ORDER OF 1 PF, INTERDIGITAL CAPACITORS WERE USED, AS THESE HAD
PREVIOUSLY BEEN FOUND TO HAVE LOW LOSS AND WELL-DEFINED
CAPACITANCE. A HEMLETT-PACKARD TYPE 35022 TRANSISTOR WAS
SELECTED WHICH WAS IN A FORM SUITABLE FOR ATTACHING TO THICK
FILM CONDUCTORS AND COMPLETELY CHARACTERISED AT THE OPERATION
FREQUENCY, TO IMPROVE STABILITY AND LOWER TRANSISTOR NOISE THE
COMMON EMITTER CONNECTION WAS EMPLOYED (4 Refs)
Descriptores: MICROPAVE AMPLIFIERS; HYBRID INTEGRATED
CIRCUITS; THICK FILM CIRCUITS
Identifiers: HEMLETT PACKARD TYPE 35022 TRANSISTOR;
MICROSTRIP LAUNCHER; SHORTING BAR; PLATE HOLDING LAUNCHER;
GROUND CONTACT; INTERDIGITAL CAPACITORS; THICK FILM CONDUCTORS
; STABILITY; TRANSISTOR NOISE; COMMON EMITTER CONNECTION
02
Section Class Codes: B1840, B2540, B2522
Unified Class Codes: B1840, B2540, B2522, SMCCAX

758196 87516643, C7511147
CONTROLLABLE L.V. AUDIO AMPLIFIER FOR MINIATURE RECEIVER
Patent No.: UK 1377143 Assignees: MOTOROLA INC Filed:
25 MAY 1972
Original Patent Appl. No.: US 151461
Priority Date: 9 JUNE 1971
11 DEC. 1974

A BATTERY OPERATED RADIO PAGER HAS AN AUDIO AMPLIFIER WITH
AN INTEGRATED CIRCUIT CHIP COMBINED WITH OTHER COMPONENTS ON A
THICK FILM. DESIGNED FOR HIGH STABILITY AT LOW OPERATING
VOLTAGES. IN A VERY COMPACT DESIGN, AND WHICH INCLUDES A
PREAMPLIFIER ON THE THICK FILM AND A POWER AMPLIFIER ON THE
CHIP, TURNED OFF. BUT SWITCHED ON WHEN A PAGING TIME IS
RECEIVED
Descriptores: MOBILE RADIO SYSTEMS; AUDIO-FREQUENCY
AMPLIFIERS; PREAMPLIFIERS; RADIO RECEIVERS; THICK FILM
CIRCUITS; COMMUNICATIONS APPLICATIONS OF CONTROL
Identifiers: BATTERY OPERATED RADIO PAGER; AUDIO AMPLIFIER;
INTEGRATED CIRCUIT CHIP; THICK FILM; PREAMPLIFIER; POWER
AMPLIFIER
08

Section Class Codes: B3566, B1840, C7883, C7895
Unified Class Codes: FEKRA, ETHAAB, VMTGAL, VMZMAB

Unified Class Codes: SMCEAH, SMCAAL

755543 87516785
MODULE CHASSIS IV-A CONCEPT OF COLOUR RECEIVER WITH COLD
CHASSIS (DESIGN USING THICK AND THIN FILM CIRCUITS)
DAGSCHAT, R.
SIEMENS AG, MUNICHEN, GERMANY
COMPONENTS REP. (GERMANY) VOL. 9, NO. 5 146-51 DEC. 1974
Codon: CMRECH
FOR SOME YEARS NOW, THERE HAS BEEN A DEFINITE TREND TOWARDS
MODULARIZATION IN COLOUR TELEVISION SETS. MOST OF THE NEW
DEVELOPMENTS SHOW A LAYOUT MODULARIZED TO A GREATER OR LESSER
EXTENT. IN THIS LABORATORY DEVELOPMENT OF MODULE TECHNOLOGY
WITH PARTICULAR RESPECT TO THE POWER SUPPLY AND POWER STAGES
AND NOT ONLY OF SMALL SIGNAL STAGES HAS BEEN CARRIED OUT.
FROM EXPERIENCE, POWER STAGES HAVE A RELATIVELY HIGH FAILURE
RATE AND ALSO GIVE THE SERVICE TECHNICIAN MORE DIFFICULTIES.
THE SYSTEM DESCRIBED TAKES INTO ACCOUNT THE USE OF THIN AND
THICK FILM CIRCUITS. THE PRESENT CONCEPT INTENDS TO INITIATE
VALUABLE DESIGN OF MODULE COLOUR TV SETS WITH SPECIAL
ATTENTION TO THE INTERFACES
Descriptores: COLOUR TELEVISION RECEIVERS; MODULES; THICK
FILM CIRCUITS; THIN FILM CIRCUITS
Identifiers: MODULAR DESIGN; THICK FILM CIRCUITS; COLD
CHASSIS; THIN FILM CIRCUITS
02
Section Class Codes: B3740, B2522, B2524
Unified Class Codes: FKGAAM, SMCCAX, SMCEAH

754402 87515397
FACILITIES, EQUIPMENT, AND MANUFACTURING OPERATIONS FOR
CIRCUIT DEPOSITION AND TESTING (THICK FILM CIRCUIT
MANUFACTURE)
COLE, R.E.
INTEGRATED CIRCUITS INC., BELLEVUE, WASH., USA
SOLID STATE TECHNOL. (USA) VOL. 18, NO. 1 49-52 JAN.
1975 Codon: SSTCAP
THE FACILITIES REQUIRED TO SCREEN PRINT, FIRE AND ADJUST
THICK FILM COMPONENTS ARE EXAMINED. THE SUBJECT IS EXPLORED IN
SUFFICIENT DETAIL TO ALLOW THE READER TO UNDERSTAND THE
PROCESS, ALONG WITH ITS ADVANTAGES AND DISADVANTAGES. THE
INFORMATION REQUIRED TO AVOID THE USUAL PITFALLS IS GIVEN
Descriptores: THICK FILM CIRCUITS; INTEGRATED CIRCUIT
PRODUCTION; THICK FILM RESISTORS
Identifiers: THICK FILM CIRCUITS; SCREEN PRINTING; RESISTOR
ADJUSTMENT; THICK FILM CIRCUIT FIRING; INTEGRATED CIRCUIT
PRODUCTION; ECONOMIES; FACILITIES; EQUIPMENT; MANUFACTURING
OPERATIONS; CIRCUIT DEPOSITION; TESTING; THICK FILM COMPONENTS
; ADVANTAGES; DISADVANTAGES; PITFALLS
02
Section Class Codes: B2522, B2210
Unified Class Codes: SMCCAX, SEEAAS

754403 87515399
THIN FILM PATTERNS WITH SLOPING EDGES
MICROELECTRON. AND RELIAB. (GB) VOL. 14, NO. 1 69 FEB.
1975 Codon: MCRLAS
DISCUSSES A NEW METHOD WITH WHICH IT IS POSSIBLE TO PRODUCE
ETCHED PATTERNS HAVING GENTLY SLOPING SIDES FOR THIN FILM
DEVICES AND OTHER INTEGRATED CIRCUITS. THE ANGLE OF SLOPE CAN
HERE BE ADJUSTED WITHIN WIDE LIMITS AND IS REPRODUCIBLE. AN
AUXILIARY FILM IS FIRST APPLIED TO THE SURFACE WHICH IS TO BE
PROCESSED. THIS AUXILIARY FILM HAS THE PROPERTY OF ETCHING
AWAY MORE QUICKLY IN THE ETCHING AGENT USED THAN THE MATERIAL
WHICH IT IS DESIRED TO PATTERN. IN THE COURSE OF ETCHING THIS
CLAIMS TO A SLOPE WITH UNIFORM INCLINATION. THE METHOD HAS BEEN
WORKED OUT FULLY FOR THIN FILMS OF GOLD, OF PERSALLOY AND
SILICON DIOXIDE UP TO ABOUT 10 MUM THICK. IT IS POSSIBLE TO
ADJUST THE ANGLE OF SLOPE AS DESIRED, TO BETWEEN 1 DEGREE AND
ABOUT 60 DEGREES BY VARYING OF THE COMPOSITION OF THE ETCHING
AGENT OR OF THE AUXILIARY FILM. A MICROGRAPH OF A TREATED FILM
OF SILICON DIOXIDE ON SILICON IS SHOWN
Descriptores: INTEGRATED CIRCUIT PRODUCTION; THIN FILM
CIRCUITS; THIN FILM DEVICES
Identifiers: AU FILMS; SiO₂/SUB 2/ FILMS; THIN FILM PATTERNS;
SLOPING EDGES; THIN FILM DEVICES; INTEGRATED CIRCUITS; NEW
METHOD; ETCHED PATTERNS; AUXILIARY FILM; ETCHING AGENT;
PERSALLOY; MICROGRAPH
02
Section Class Codes: B2524, B2520

754401 87515396
NOVEL SCREEN PRINT STENCILS FOR THICK FILM TECHNIQUE
SCHNEIDER, J.
ELEKTROH. IND. (GERMANY) VOL. 5, NO. 12 EP. 15 DEC. 1974
Codon: EKIDAT
THE METHOD EMPLOYS A 40-70 MUM THICK PHOTOPOLYMER FILM WHICH
RESISTS ELECTROLYTIC BATHS, ETCHANTS AND A NUMBER OF SOLVENTS.
THE PROCESS OF STENCIL PREPARATION IS BRIEFLY DESCRIBED. A
RESOLUTION OF 50 MUM CAN BE ACHIEVED. THE STENCILS CAN BE USED
FOR SEVERAL THOUSAND PRINTS THEN REMOVED WHEN THE SCREEN IS
AVAILABLE FOR FURTHER APPLICATIONS
Descriptores: THICK FILM CIRCUITS; INTEGRATED CIRCUIT
PRODUCTION
Identifiers: 40 TO 70 MICRON THICK PHOTOPOLYMER FILM;
ETCHANT RESIST; THICK FILM CIRCUITS; ELECTROLYTIC BATH RESIST;
SOLVENT RESIST; 50 MICRON RESOLUTION; SCREEN PRINT STENCILS
02
Section Class Codes: B2522
Unified Class Codes: SMCCAX
Language: GERMAN

754043 87514955
DESIGN AND CONSTRUCTION OF ACTIVE RC FILTERS (INTEGRATED CIRCUITS)
BUSELMANN, W.
CODING: EKIDAT (GERMANY) VOL.5, NO.12 271-3 DEC. 1974
THE TECHNICAL FEASIBILITY OF REPLACING CONVENTIONAL PASSIVE LC NETWORKS FOR LOW FREQUENCIES (BELOW 20 KHZ) WITH ACTIVE RC FILTERS IS DISCUSSED, CONSIDERING THE USE OF ADVANCED TANTALUM FILM TECHNOLOGY WITH INTEGRATED OPERATIONAL AMPLIFIERS (5 Refs.)
Descriptores: ACTIVE FILTERS; THIN FILM CIRCUITS; HYBRID INTEGRATED CIRCUITS
Identifiers: DESIGN; CONSTRUCTION; ACTIVE RC FILTERS; FEASIBILITY; PASSIVE LC NETWORKS; BELOW 20 KHZ; INTEGRATED OPERATIONAL AMPLIFIERS; ADVANCED TA FILM TECHNOLOGY; LP
02
Section Class Codes: B1880, B2524, B2540
Unified Class Codes: ETRAAH, SMCFAH, SNEAAB
Language: GERMAN

753809 87514771
HARMONICALLY PUMPED STRIPLINE DOWN-CONVERTER
SCHNEIDER, M.V.; SNELL, W.M., JR.
DELL LAIS, HOLMDEL, N.J., USA
IEEE TRANS., MICROWAVE THEORY AND TECH. (USA) VOL.MT-23, NO.3 271-5 MARCH 1975 CODING: LETMAH
A NOVEL THIN-FILM DOWN-CONVERTER WHICH IS PUMPED AT A SUBMULTIPLE OF THE LOCAL-OSCILLATOR FREQUENCY HAS GIVEN A CONVERSION LOSS WHICH IS COMPARABLE TO THE PERFORMANCE OF CONVENTIONAL BALANCED MIXERS. THE CONVERTOR CONSISTS OF TWO STRIPLINE FILTERS AND TWO SCHOTTKY-BARRIER DIODES WHICH ARE SHORT-CIRCUITED IN A STRIPLINE TRANSMISSION LINE. THE CONVERSION LOSS MEASURED AT A SIGNAL FREQUENCY OF 3.5 GHZ IS 3.2 DB FOR A PUMP FREQUENCY OF 1.7 GHZ AND 4.9 DB FOR A PUMP FREQUENCY OF 0.85 GHZ. THE CIRCUIT LOOKS ATTRACTIVE FOR USE AT MILLIMETER-WAVE FREQUENCIES WHERE STABLE PUMP SOURCES WITH LOW FM NOISE ARE NOT READILY AVAILABLE. (14 Refs)
Descriptores: PARAMETRIC DEVICES; SOLID-STATE MICROWAVE CIRCUITS; FREQUENCY CONVERTORS; STRIP LINES; THIN FILM CIRCUITS; HYBRID INTEGRATED CIRCUITS
Identifiers: THIN FILM STRIPLINE CIRCUIT; HARMONICALLY PUMPED DOWN CONVERTOR; MIC; BALANCED MIXERS; SCHOTTKY BARRIER DIODES; FM NOISE; STRIPLINE FILTERS
02
Section Class Codes: B1810, B1820, B2524, B2540
Unified Class Codes: ETRAAH, ETEAAB, SMCFAH, SNEAAB

746026 87511715, C7509539
THIN-FILM MEMORY WITH A 400 NS CYCLE
HAEGERIK, R.; HOL, A.
ELEKTROTECH. GAS. (CZECHOSLOVAKIA) VOL.26, NO.1 43-52

1975 Coden: ELKCA9
IN THE WORK A DESCRIPTION IS GIVEN OF A FAST MEMORY, USING THIN-FILM MEMORY ELEMENTS WITH DESTRUCTIVE READING. THE FUNCTION OF THIN-FILM MEMORY ELEMENTS IS MENTIONED, AS WELL AS THE MEMORY BLOCK, AND THE MAIN ELECTRONIC CIRCUITS OF THE MEMORY. PARAMETERS ARE GIVEN OF VARIOUS ELECTRONIC CIRCUITS AS WELL AS OF THE COMPLETE MEMORY (8 Refs)
Descriptores: THIN FILM CIRCUITS; SEMICONDUCTOR STORAGE DEVICES
Identifiers: THIN FILM MEMORY; 400 NS CYCLE; DESTRUCTIVE READING; ELECTRONIC CIRCUITS; PARAMETERS
02
Section Class Codes: B2524, C0560
Unified Class Codes: SMCFAH, XKKAAX
Language: SLOVAK

743246 87511778
MULTIPLE POSITION NEST FOR BONDING
FOWLER, W.H.
WESTERN ELECTRIC CO., ALLENTOWN, PA., USA
TECH. DIG. (USA) NO.36 9-10 OCT. 1974 CODING: TCHDAV
DESCRIBES A POSITIONING DEVICE FOR BONDING SEMICONDUCTOR DEVICES TO THIN-FILM CIRCUITS USING A HORIZONTAL PLATE REQUIRED TO SUPPORT THE CIRCUITS IN RELATION TO THE BONDING THERMODE. THE SUPPORT PLATE HAS A NEST FORMED IN IT FOR THE THIN-FILM CIRCUIT TO POSITION THE CIRCUIT SO THAT A BONDING SITE IS LOCATED (BENEATH THE BONDING THERMODE. NORMALLY ONE PLATE, WITH THE NEST APPROPRIATELY LOCATED, IS USED FOR EACH BONDING SITE ON A PARTICULAR THIN-FILM CIRCUIT. THE NUMBER OF SUPPORT PLATES MAY BE REDUCED BY SEPARATING THE NEST FROM THE PLATE AS DESCRIBED. (11 Refs)
Descriptores: THIN-FILM CIRCUITS; HYBRID INTEGRATED CIRCUITS; INTEGRATED CIRCUIT PRODUCTION
Identifiers: THIN FILM CIRCUITS; CIRCUIT POSITIONING DEVICE; BONDING SITE LOCATION; MULTIPLE POSITION NEST FOR BONDING; BONDING SEMICONDUCTOR DEVICES; BONDING THERMODE; SUPPORT PLATE
02
Section Class Codes: B2560, B1269
Unified Class Codes: SMCFAH, ADGMAE

743245 B7511777
SOLDERING OF HYBRID INTEGRATED CIRCUIT
KAGEYAMA, K.; YOSHIKAWA, T.; MINATOGUCHI, T.
AURITSU ELECTRIC CO. LTD., TOKYO, JAPAN
AURITSU TECH. BULL. (JAPAN) NO.30 127-31 DEC. 1973
Code: ANIKAE

THIS ARTICLE IS CONCERNED WITH THE ADHESION STRENGTH OF
SOLDERED LEAD-WIRES AND ALSO THE EXTINCTION OF CIRCUIT FILMS
BY SOLDERING. THESE EFFECTS DEPEND UPON THE FILM MATERIALS.
THE COMBINATIONS OF LAYERED FILMS AND THEIR THICKNESS.
EXPERIMENTAL STUDIES, EMPLOYING SMOOTHED-ALUMINA SUBSTRATES,
HAVE BEEN CONDUCTED IN COMBINATIONS OF TA/SUB 2/N, CR OR NICK,
AU AND AU PLATING. THE RESULTS ARE PRESENTED AND DISCUSSED (2 Pgs)

Descriptors: HYBRID INTEGRATED CIRCUITS; SOLDERING;
MECHANICAL STRENGTH; THIN FILM CIRCUITS; INTEGRATED CIRCUIT
TESTING

Identifiers: HYBRID INTEGRATED CIRCUIT; ADHESION STRENGTH OF
SOLDERED LEAD WIRE; EXTINCTION OF CIRCUIT FILMS; SOLDERING;
COMBINATIONS OF LAYERED FILMS; SUBSTRATES

02
Section Class Codes: B2560, B2540, B2524
Unified Class Codes: SNGAAR, SNEAAB, SNECAH
Language: JAPANESE

743244 B7511776
WIRE BONDING FOR THIN-FILM INTEGRATED CIRCUIT
KAGEYAMA, K.; YOSHIKAWA, T.; NISHIMURA, Y.
AURITSU ELECTRIC CO. LTD., TOKYO, JAPAN
AURITSU TECH. BULL. (JAPAN) NO.30 121-6 DEC. 1973
Code: ANIKAE

THE BONDING STRENGTH OF LEADWIRES DEPENDS UPON THE FILM
MATERIALS. THE COMBINATIONS OF LAYERED FILMS AND THEIR
THICKNESS, AND THE HEATING CONDITIONS OF SUBSTRATES.
EXPERIMENTAL STUDIES, EMPLOYING SMOOTHED-ALUMINA AND GLASS
SUBSTRATES, HAVE BEEN CONDUCTED IN COMBINATIONS AND HEATING
CONDITIONS OF TA/SUB 2/N, NICK, AU AND AU PLATING. THE RESULTS
ARE PRESENTED AND DISCUSSED (4 Pgs)

Descriptors: THIN FILM CIRCUITS; MECHANICAL STRENGTH; WIRES
(ELECTRIC); JOINING PROCESSES; INTEGRATED CIRCUIT TESTING
Identifiers: THIN FILM IC; BONDING STRENGTH OF LEADWIRES;
COMBINATIONS OF LAYERED FILMS; HEATING CONDITIONS OF
SUBSTRATES

02
Section Class Codes: B2560, B2524
Unified Class Codes: SNGAAR, SNECAH
Language: JAPANESE

743241 B7511773
THIN FILM HYBRID CRYSTAL OSCILLATOR
DUNEY, G.C.; SINGH, R.A.
SOLID STATE PHYS. LAB., DELHI, INDIA

J. INST. ELECTRON. AND TELECOMMUN. ENG. (INDIA) VOL.20.
NO.3-4 119-21 MARCH-APRIL 1974 Code: JIETAU
A THIN FILM COLPITTS TYPE 3.155 MHZ CRYSTAL OSCILLATOR HAS
BEEN DESIGNED AND FABRICATED. THIS MEETS THE REQUIREMENTS OF
HIGH STABILITY COMBINED WITH SMALL PHYSICAL DIMENSIONS. BOTH
THE CIRCUIT AND THE CRYSTAL ARE CONTAINED WITHIN A TEMPERATURE
CONTROLLED OVEN AS PROTECTION AGAINST AMBIENT TEMPERATURE
CHANGES. (7 Pgs)

Descriptors: THIN FILM CIRCUITS; HYBRID INTEGRATED CIRCUITS;
OSCILLATORS; FREQUENCY STABILITY; CRYSTAL RESONATORS; OVENS
Identifiers: THIN FILM HYBRID IC; COLPITTS CRYSTAL
OSCILLATOR; 3.155 MHZ; HIGH STABILITY; SMALL PHYSICAL
DIMENSIONS; TEMPERATURE CONTROLLED OVEN

02
Section Class Codes: B2540, B2524, B1850
Unified Class Codes: SNEAAB, SNECAH, ETKAAR

743240 B7511772
NEW ALUMINA SUBSTRATE FOR HYBRID INTEGRATED CIRCUITS
NIMA, K.; NAKAMURA, J.; MURAKAWA, K.; NAKAMURA, M.
FUJITSU LABS. LTD., NAKAHARAKU, KAWASAKI, JAPAN
IEEE TRANS. PARTS, HYBRIDS AND PACKAG. (USA) VOL. PHP-10.
NO. 4 262-6 DEC. 1974 Code: IEPHAA

A NEW ALUMINA SUBSTRATE WHICH INCLUDES CR/SUB 2/O/SUB 3/ AND
MGO AS THE ADDITIVES, WITH AN EXTREMELY SMOOTH SURFACE IS
DEVELOPED. RELIABILITY DATA AND CHARACTERISTICS OF TANTALUM
NITRIDE OR TANTALUM AND TANTALUM OXIDE FILMS ON THE NEW
SUBSTRATE ARE COMPARED WITH THOSE ON THE GLAZED ALUMINA (9
Pgs)

Descriptors: SUBSTRATES; HYBRID INTEGRATED CIRCUITS;
INTEGRATED CIRCUIT PRODUCTION; THIN FILM CIRCUITS
Identifiers: HYBRID IC; RELIABILITY DATA; TA/SUB 2/N FILM;
CAPACITOR PROPERTIES; RESISTOR PROPERTIES; SURFACE TOPOGRAPHY;
ALUMINA SUBSTRATE

02
Section Class Codes: B2540, B2524
Unified Class Codes: SNEAAB, SNECAH

743230 87511770
CHARACTERIZATION OF A CHROMIUM-GOLD DEPOSITION PROCESS FOR
THE PRODUCTION OF THIN FILM HYBRID MICROCIRCUITS
CLAY, F.A.; PANOUSIS, N.T.; PIERCE, R.W., JR.
BENDY CORP., KANSAS CITY, MO., USA
IEEE TRANS., PARTS, HYBRIDS AND PACKAG. (USA) VOL. PHP-10,
NO. 4, 258-62, DEC. 1974 Coden: IEPHAA
DESCRIBES THE EFFECT OF CHROMIUM DEPOSITION RATE, GOLD
DEPOSITION RATE AND SUBSTRATE TEMPERATURE ON THE ADHESION,
RESISTIVITY AND THERMOCOMPRESSION BONDABILITY OF THE FILM
PRODUCT. TANTALUM NITRIDE COATED, ALUMINUM OXIDE SUBSTRATES
WERE USED IN THIS WORK. THE ADHESION WAS CHECKED USING THE
STANDARD TAPE TEST; THE RESISTIVITY WAS MEASURED USING A FOUR
POINT PROBE; AND THE BONDABILITY WAS EVALUATED USING A FINE
WIRES AND LEAD FRAMES. AUGER ELECTRON SPECTROSCOPY WAS USED TO
MONITOR THE SURFACE OF THE FILM (9 Refs)
Descriptiors: HYBRID INTEGRATED CIRCUITS; INTEGRATED CIRCUIT
PRODUCTION; METALLIC THIN FILMS; ADHESION; THIN FILM CIRCUITS
Identifiers: CR DEPOSITION RATE; AU DEPOSITION RATE;
SPECTROSCOPY; TA/SUB 2/N COATING; AL/SUB 2/O/SUB 3/ SUBSTRATE;
DIFFUSION; THIN FILM HYBRID MICROCIRCUITS; SUBSTRATE
TEMPERATURE; ADHESION; RESISTIVITY; THERMOCOMPRESSION
BONDABILITY
02
Section Class Codes: B2540, B2524
Unified Class Codes: SMEAR, SMCEAH

743231 87511770
AN APPROACH FOR EVALUATING POLYMER MATERIALS AS PROTECTIVE
COATINGS ON HYBRID MICROCIRCUITS
SELDON, J.R.
WESTINGHOUSE ELECTRIC CORP., PITTSBURGH, PA., USA
IEEE TRANS. PARTS, HYBRIDS AND PACKAG. (USA) VOL. PHP-10,
NO. 4, 251-7, DEC. 1974 Coden: IEPHAA
RESULTS ARE DISCUSSED OF AN EVALUATION PROGRAM WHICH IS IN
TERMS OF SEVEN POTENTIAL MECHANISMS BY WHICH COATINGS COULD
FAIL TO PROVIDE PROTECTION. EMPHASIS IS ON DESCRIBING THOSE
SIX TESTS WHICH DEVELOPED DIFFERENCES IN MATERIAL BEHAVIOR
CONFINED TO BE SIGNIFICANT IN TERMS OF THE GENERAL
APPLICATION. THREE INVOLVED ELECTRICAL PERFORMANCE OF THE
FILM, ALONE OR IN CONJUNCTION WITH HYBRID CIRCUIT ELEMENTS,
TWO DEALT WITH MECHANICAL PROPERTIES, AND ONE WITH CHEMICALLY
RELATED BEHAVIOR. IT IS SUGGESTED THAT THE TESTS COULD BE USED
FOR PARTICULAR APPLICATIONS WHICH RELATE TO THE TEST
CONDITIONS OR IN UNDERSTANDING SOME FAILURE MODES WHICH COULD
BE EXPECTED IN COMPLEX HYBRID MICROCIRCUIT ASSEMBLIES. A BRIEF
REVIEW IS GIVEN OF THOSE TESTS WHICH WERE NOT CONSIDERED TO
DEVELOP DISTINCTIONS BETWEEN MATERIALS. THE ROLE OF ORGANIC
COATINGS ON BARE SEMICONDUCTOR DEVICE SURFACES WAS NOT
INVESTIGATED (7 Refs)
Descriptiors: HYBRID INTEGRATED CIRCUITS; PROTECTIVE COATINGS
; ALKALISING; POLYMERS
; POLYMER; ELECTRICAL BEHAVIOUR; ENCAPSULATION; THERMAL

: POLYMER MATERIALS; PROTECTIVE COATINGS; HYBRID MICROCIRCUITS
; EVALUATION PROGRAM; MATERIAL BEHAVIOUR; ELECTRICAL
PERFORMANCE; MECHANICAL PROPERTIES; TEST CONDITIONS
02
Section Class Codes: B2540, B1266
Unified Class Codes: SMEAR, ADGMAH

743200 A7526271, 87511718
THE STRUCTURE AND PROPERTIES OF THIN METAL FILMS
HOFFMAN, D.M.
RCA LABS., PRINCETON, N.J., USA
US ARMY
PROCEEDINGS OF THE 28TH ANNUAL FREQUENCY CONTROL SYMPOSIUM
1974 85-8 1974
29-31 MAY 1974 ATLANTIC CITY, N.J., USA
ELECTRONIC INDUSTRIES ASSOC. WASHINGTON, D.C., USA
THE PROPERTIES OF VACUUM EVAPORATED THIN METAL FILMS ARE
DIRECTLY ATTRIBUTABLE TO THE CONDITIONS OF PREPARATION. AMONG
THESE PARAMETERS ARE RESIDUAL ATMOSPHERE, RATES OF EVAPORATION
AND DEPOSITION, PURITY OF SOURCE MATERIAL AND EVAPORANT,
SUBSTRATE TEMPERATURE AND CLEANLINESS. SOME OF THE REASONS FOR
VARIATION OF THE PROPERTIES OF FILMS FROM THOSE OF BULK METALS
ARE DISCUSSED AS WELL AS WAYS OF MINIMIZING THESE EFFECTS.
ILLUSTRATIONS FOCUS ON METALS USED IN CRYSTAL COATING, E.G.
GOLD, CHROMIUM, AND SILVER (20 Refs)
Descriptiors: METALLIC THIN FILMS; CRYSTAL GROWTH FROM VAPOUR
; THIN FILM CIRCUITS; ADHESION
Identifiers: EVAPORATION RATE; DEPOSITION RATE; PURITY OF
EVAPORANT; VACUUM EVAPORATED THIN METAL FILMS; CONDITIONS OF
PREPARATION; RESIDUAL ATMOSPHERE; PURITY OF SOURCE MATERIAL;
SUBSTRATE TEMPERATURE; CLEANLINESS; CRYSTAL COATING; STRUCTURE
06
Section Class Codes: A9112, A8362, A7880, B2524
Unified Class Codes: ZGCCAX, RGGCAD, NVAAK, SMCEAH

743199 87511717
SELECTIVE FLOW COATING OF THIN FILM INTEGRATED CIRCUITS
TECH, DIG. (USA) NO.36 33-4 OCT. 1974 Coden: TCHOAV
WYLIE, J.R.
DESCRIBES A SELECTIVE COATING TECHNIQUE WHICH PROVIDES
PROTECTION AGAINST MOISTURE AND MECHANICAL DAMAGE ALLOWING
POST TRIMMING OF THIN FILM RESISTORS, CAPACITORS OR DISCRETE
COMPONENTS OF THE CIRCUIT WHEN REQUIRED. ALSO CONTACT PADS
REMAIN EXPOSED TO PROVIDE CONNECTION POINTS TO OTHER CIRCUITRY
Descriptiors: THIN FILM CIRCUITS; ENCAPSULATION
Identifiers: POST COATING TRIMMING; SELECTIVE FLOW COATING;
THIN FILM INTEGRATED CIRCUITS; COATING TECHNIQUE; CONTACT PADS
02
Section Class Codes: B2524, B1267, B1266
Unified Class Codes: SMCEAH, ADGMAH, ADGMAH

7426R5 B7511160
HYBRID CIRCUIT TECHNOLOGY: RADIATION OF A FAST INS AMPLIFIER
VELER, J.C.
CIA/CLNG. GRENOBLE, FRANCE
THIN SOLID FILMS (SWITZERLAND) VOL. 24, NO. 2 251-60
DEC. 1974 Coden: THSFAP
A FAST RISE-TIME AMPLIFIER (1 NS) HAS BEEN MADE USING HYBRID
MICROCIRCUIT TECHNOLOGY. THIS IS A SINGLE POLARITY PULSE
AMPLIFIER WITH A 20 DB VOLTAGE GAIN. THE AUTHOR USED THIN FILM
TECHNOLOGY ON CERAMIC SUBSTRATES AND AN ELECTRON-BEAM GUN FOR
EVAPORATING THE TANTALUM AND GOLD. AN INVESTIGATION OF THE
AMPLIFIER HAS INDICATED THAT THE CHARACTERISTICS OF THE HYBRID
MICROCIRCUIT ARE BETTER THAN THOSE OF THE PRINTED CIRCUIT
VERSION. THE IMPROVEMENTS ARE A SHORTER OUTPUT RISE-TIME AND
AN APERIODIC RESPONSE (15 Refs)
Descriptors: PULSE AMPLIFIERS; HYBRID INTEGRATED CIRCUITS
Identifiers: FAST RISE TIME AMPLIFIER; TA; AU; HYBRID
MICROCIRCUIT TECHNOLOGY; SINGLE POLARITY PULSE AMPLIFIER; 20
DB VOLTAGE GAIN; CERAMIC SUBSTRATES
02
Section Class Codes: B1840, B2540
Unified Class Codes: ETHAAB, SMEAAB
Language: FRENCH

738R13 A7522604, B7508602
FLAT-SURFACE ALUMINUM-OXIDE CERAMICS
SILANDKOVICS, L.
FINNTECH, AND MIKROTECH, (HUNGARY) VOL. 13, NO. 9 262-6
SEPT. 1974 Coden: FNNWAY
SUGGESTS ON THE BASIS OF EXPERIMENTS THAT CHEMICALLY PURE
RAW MATERIAL WITH AVERAGE GRAIN SIZE OF MAX. 1 μm CONTAINING
ALSO ADDITIVES TO PREVENT GRAIN GROWTH, IS NECESSARY TO
PRODUCE ALUMINUM-OXIDE CERAMICS WITH A SURFACE ROUGHNESS OF
BELOW 0.5-0.1 μm. AFTER MOLDING AT HIGH RAW DENSITY, THIS
SHOULD BE SINTERED AT A POSSIBLY LOW TEMPERATURE (AROUND 1600
DEGREES C). THE FINE CRYSTAL PROFILE ATTAINS ITS FINAL SURFACE
FINISH AFTER MULTISTEP GRINDING AND POLISHING. CORRELATIONS
ARE GIVEN ON THE EFFECT OF SiO2/SUB 2/ CONTENT AND OF GRAIN
SIZE ON SURFACE ROUGHNESS. FURTHER SINTERING CHARACTERISTICS
ARE PRESENTED. THE EXPERIMENTS ARE CONNECTED PRIMARILY WITH
THE PRODUCTION TECHNOLOGY OF THICK AND THIN FILM INTEGRATED
CIRCUIT SUBSTRATES (29 Refs)
Descriptors: CERAMICS; ALUMINUM COMPOUNDS; INTEGRATED
CIRCUIT PRODUCTION; SUBSTRATES; THIN FILM CIRCUITS; THICK FILM
CIRCUITS
Identifiers: FLAT SURFACE; AL/SUB 2/O/SUB 3/ CERAMICS; THICK
FILM CIRCUIT SUBSTRATES; INTEGRATED CIRCUIT PRODUCTION; GRAIN
GROWTH; SURFACE ROUGHNESS; SURFACE FINISH; EFFECT OF SiO2/SUB
2/; GRAIN SIZE; SINTERING CHARACTERISTICS; THIN FILM
INTEGRATED CIRCUIT SUBSTRATES

733935 B7509632
TANTALUM NITRIDE THIN FILM CIRCUITS FOR CS-36M SUBMARINE
CABLE REPEATER
MATSUMOTO, T.; MAYASHI, K.; YAMAMOTO, T.; MORIYA, K.
ELECTR. COMMUN. LAB. TECH. J. (JAPAN) VOL. 23, NO. 8
1543-61 1974 Coden: TJECAS
(12 Refs)
Descriptors: SUBMARINE CABLES; REPEATERS; TANTALUM COMPOUNDS
; THIN FILM CIRCUITS
Identifiers: TANTALUM NITRIDE THIN FILM CIRCUITS; CS36M
SUBMARINE CABLE REPEATERS
02
Section Class Codes: B3562, B1840, B2524
Unified Class Codes: FEKEAX, ETHAAB, SMEAH
Language: JAPANESE

733028 B7508625
IDENTIFICATION OF AGCL AS A SURFACE CONTAMINANT ON HYBRID
MICROCIRCUIT CAPACITORS USING ION MICROPROBE TECHNIQUES
GUTHRIE, J.W.
SANDIA LABS., ALBUQUERQUE, N.MEX., USA
J. ELECTROCHEM. SOC. (USA) VOL. 121 NO. 12 1617-20
DEC. 1974 Coden: JESDAN
AN ION MICROPROBE MASS ANALYZER (IMMA) WAS USED FOR THE
IDENTIFICATION ANALYSIS OF A MICRON-SIZED SURFACE CONTAMINANT
ON HYBRID MICROCIRCUIT BARIUM TITANATE CAPACITORS WITH SILVER
FRIT TERMINATIONS. A 18.5 KEV O/SUB 2//SUP +/- SPUTTERING ION
BEAM WAS USED TO OBTAIN CHARACTERISTIC POSITIVE AND NEGATIVE
SPUTTERED ION SPECIES FOR MASS SPECTRA. SCANNING ION
MICROGRAPHS, AND DEPTH PROFILES FROM CLEAN AND CONTAMINATED
CAPACITORS, THE MASS SPECTRA FROM THE CONTAMINATED CAPACITORS
CONTAINED SIGNIFICANT PEAKS FOR AGOH/SUP +/-, HACL/SUP +/-,
AG/SUB 2//SUP +/-, AG/SUB 2/OH/SUP +/-, AND CL/SUP +/- SPUTTERED
ION SPECIES. ON THE CLEAN CAPACITORS THESE SPECIES WERE
DETECTED ONLY AS LOW DENSITY PEAKS OR NOT AT ALL. SILVER
CHLORIDE WAS IDENTIFIED AS A MAJOR CONTAMINANT BY COMPARING
AGCL CALIBRATION MASS SPECTRA WITH THE MASS SPECTRA OBTAINED
FROM THE CLEAN AND THE CONTAMINATED CAPACITORS (9 Refs)
Descriptors: HYBRID INTEGRATED CIRCUITS; CAPACITORS
Identifiers: SURFACE CONTAMINANT IDENTIFICATION; AG FRIT
TERMINATIONS; AGCL; HYBRID MICROCIRCUIT CAPACITORS; ION
MICROPROBE TECHNIQUES; SPUTTERED ION SPECIES
02
Section Class Codes: B2540, B2670
Unified Class Codes: SMEAAB, SNMAAR

IN ORDER TO SUPPRESS TRANSPORT STRAIN AND PLASTIC
DEFORMATION, ALUMINUM EVAPORATION CONDITIONS MAKING UNIFORM
FILM WITH LARGE GRAIN SIZE WERE INVESTIGATED. ALUMINUM STRIPE
FILMS IN FOUR GRAIN SIZE CATEGORIES WERE MADE AND HIGH
TEMPERATURE-HIGH CURRENT TESTS WERE PERFORMED. IT WAS FOUND
THAT THE AVERAGE GRAIN SIZE D HAD A LARGE EFFECT ON MEAN TIME
TO FAILURE. ACTIVATION ENERGY AND CURRENT DENSITY INDEX, THE
RELATION OF RTF AND D WAS $MTE-D/SUP N/(N-1)$ AT STRIPE WIDTH
W=7-20UM, AND RTF INCREASED LINEARLY WITH W (10 Refs)
D-SCHEPERS: THIN FILM CIRCUITS; CRYSTAL GROWTH FROM VAPOUR;
CIRCUIT RELIABILITY; GRAIN SIZE; UNIFORM FILM; GRAIN SIZE;
INTEGRATED CIRCUIT TESTING; ALUMINUM
IDENTIFIERS: AL EVAPORATED FILMS; UNIFORM FILM; GRAIN SIZE;
MEAN TIME TO FAILURE; ACTIVATION ENERGY; CURRENT DENSITY INDEX
; INTERCONNECTIONS

02
Section Class Codes: B252G, B2524
Unified Class Codes: SMCAT, SMCEAH

733010 87508601
AIR-ABRASIVE FUNCTIONAL TRIMMING OF THICK FILM CIRCUITS
GOULD, L.F.; WEST, R.J.; WOOD, M.J.
WESTINGHOUSE BRAKE SIGNAL CO. LTD., CHIPPENHAM, ENGLAND
ELECTROCOMPON. SCI. AND TECHNOL. (GB) VOL. 1, NO. 1 75-8
SEPT. 1974

AN MPW RT-5 AIR ABRASIVE TRIMMER HAS BEEN MODIFIED TO ALLOW
IT TO BE USED FOR FUNCTIONAL TRIMMING. THIS INVOLVES THE USE
OF A NEW GIG TO HOLD THE CIRCUIT AND TO MAKE ELECTRICAL
CONTACT WITH ITS TERMINALS. THE AUTOMATIC RESISTANCE BRIDGE ON
THE RT-5 IS REPLACED WITH A PULSE MEASURING CIRCUIT WHICH
STOPS THE TRIMMING CYCLE WHEN THE CORRECT OUTPUT IS OBTAINED.
D-SCHEPERS: THICK FILM CIRCUITS; INTEGRATED CIRCUIT
PRODUCTION
IDENTIFIERS: AIR ABRASIVE FUNCTIONAL TRIMMING; INTEGRATED
CIRCUIT PRODUCTION; THICK FILM CIRCUITS; PULSE MEASURING
CIRCUITS

02
Section Class Codes: B2522
Unified Class Codes: SMCCAX

732658 87508213
ACTIVE RC-FILTERS IN TANTALUM THIN-FILM HYBRID TECHNIQUE
BOSSELNANN, W.
SIEGENS AG, MUNCHEN, GERMANY
CIRCUITS REP. (GERMANY) VOL. 9 NO. 3 77-80 JULY 1974

AN ELECTRON INSTRUMENT TO CONTROL ANODIZATION OF TANTALUM
THIN FILM USED IN THE FABRICATION OF RESISTORS AND CAPACITORS
FOR HYBRID MICROCIRCUITS HAS BEEN DEVELOPED. IN THE CASE OF
RESISTORS, TANTALUM PENTOXIDE LAYER WHICH IS GROWN ON THE
SURFACE DURING ANODIZATION REDUCES THE RESISTOR TRACK
THICKNESS THEREBY INCREASING ITS RESISTANCE. DURING
ANODIZATION THE RESISTANCE IS SENSED CONTINUOUSLY USING A
WHEATSTONE BRIDGE EXCITED FROM AN A.C. VOLTAGE SOURCE. THE
FOUR ARMS OF THE BRIDGE CONSIST OF TWO EQUAL RESISTORS. THE
TANTALUM RESISTOR BEING ANODIZED AND A REFERENCE RESISTOR
BECOME. WHEN THE TANTALUM RESISTOR BECOMES EQUAL TO THE
REFERENCE RESISTOR THE OUTPUT OF THE BRIDGE AT THIS MOMENT IS
USED TO GET A STEP OUTPUT WHICH IN TURN IS USED TO STOP THE
ANODIZATION PROCESS (7 Refs)
D-SCHEPERS: CONTROLLERS; THIN FILM RESISTORS; THIN FILM
CAPACITORS; HYBRID INTEGRATED CIRCUITS; INTEGRATED CIRCUIT
PRODUCTION; THIN FILM CIRCUITS
IDENTIFIERS: THIN FILM RESISTORS; THIN FILM CAPACITORS;
ANODIZATION CONTROLLER; TANTALUM THIN FILM; FABRICATION;
HYBRID MICROCIRCUITS

02
Section Class Codes: B1880, B2540, B2524
Unified Class Codes: ETRAAM, SMEAAB, SMCEAH

FOR THE A.F. RANGE. FILTERS INCREASINGLY REPRESENT A
TECHNICAL AND OFTEN ALSO ECONOMICAL ALTERNATIVE TO LC-FILTERS.
FAVORING THEIR APPLICATION ARE THE DEGREE OF MINIATURIZATION
ACHIEVABLE IN THIS FREQUENCY RANGE, AND THE RELIABILITY,
ACCURACY, LASTING STABILITY AND TEMPERATURE CONSTANCY. MADE
POSSIBLE THROUGH THE TANTALUM-FILM TECHNOLOGY. THE DIMENSIONAL
REQUIREMENTS AND THE TECHNICAL REALIZATION OF RC-FILTERS IN
TANTALUM THIN-FILM TECHNIQUE ARE DESCRIBED (5 Refs)
D-SCHEPERS: ACTIVE FILTERS; HYBRID INTEGRATED CIRCUITS;
THIN FILM CIRCUITS
IDENTIFIERS: ACTIVE RC FILTERS; TA THIN FILM HYBRID IC;
AUDIO FREQUENCY; MINIATURIZATION; RELIABILITY; ACCURACY;
STABILITY; TEMPERATURE CONSTANCY; DIMENSIONAL REQUIREMENTS
02
Section Class Codes: B1880, B2540, B2524
Unified Class Codes: ETRAAM, SMEAAB, SMCEAH

Section Class Codes: C7895, C7610, B2540, B2210, B2670,
B2524
Unified Class Codes: VMZMAB, VKCAAQ, SMEAAB, SEEAAS, SNMAAR,
SMCEAH

721415 B7505380
THICK FILM TECHNIQUES FOR HYBRID INTEGRATED MICROWAVE
CIRCUITS
FUNK, W.; SCHILZ, W.
PHILIPS FORSCHUNGS-ABT., HAMBURG GMBH, GERMANY
RADIO AND ELECTRON. ENG. (GB) VOL.44 NO.9 504-8 SEPT.
1974 Coden: RDEE44
THE APPLICABILITY OF THICK FILM TECHNIQUE HAS BEEN
INVESTIGATED FOR FREQUENCIES ABOVE 1 GHz. BY USING A SPECIAL
TECHNIQUE (DIRECT METAL FOIL SCREENS) INTEGRATED MICROWAVE
CIRCUITS FOR FREQUENCIES UP TO 10 GHz HAVE BEEN FABRICATED.
THE SPECIAL REQUIREMENTS FOR MICROWAVE THICK FILM CIRCUITS ARE
DISCUSSED AND THE ELECTRICAL AND TECHNOLOGICAL PROPERTIES OF
THREE SELECTED MICROWAVE CIRCUITS ARE REPORTED IN DETAIL (3
Refs.)
Descriptors: HYBRID INTEGRATED CIRCUITS; SOLID-STATE
MICROWAVE CIRCUITS; THICK FILM CIRCUITS
Identifiers: THICK FILM TECHNIQUES; HYBRID INTEGRATED
MICROWAVE CIRCUITS
02
Section Class Codes: B2540
Unified Class Codes: SMEAAB

721413 B7505377
MONOLITHIC AND HYBRID INTEGRATED CIRCUITS
GALLI, H.
ELEKTRONIKER (SWITZERLAND) VOL.13, NO.10 EL6-10 OCT.
1974 Coden: ELKRB4
DISCUSSES THE CRITERIA FOR THE CHOICE OF HYBRID, RATHER THAN
MONOLITHIC INTEGRATED CIRCUITS. INTRODUCES THE BASIC
TECHNOLOGY OF THICK-FILM CIRCUITS, DESCRIBING THE BASIC
ELEMENTS, THE ADDITION OF DISCRETE SEMICONDUCTORS, AND METHODS
OF ENCAPSULATION. PRESENTS NUMEROUS PHOTOGRAPHS AS WELL AS A
TABLE QUOTING THE MAIN PHYSICAL CHARACTERISTICS OF SUBSTRATES.
DATA OF THREE DIFFERENT PASTES FOR RESISTOR DEPOSITION AND A
LIST OF SOT 23 HOUSED TRANSISTORS AND DIODES, WITH COLLECTOR
DIS-SIPATION OF APPROX. 200 mW AT 25 DEGREES C.
Descriptors: HYBRID INTEGRATED CIRCUITS; INTEGRATED CIRCUIT
PRODUCTION; MONOLITHIC INTEGRATED CIRCUITS
Identifiers: THICK FILM CIRCUITS; INTEGRATED CIRCUIT
PRODUCTION; HYBRID INTEGRATED CIRCUITS; MONOLITHIC INTEGRATED
CIRCUITS; DISCRETE SEMICONDUCTORS; ENCAPSULATION; SUBSTRATES;
PASTES FOR RESISTOR DEPOSITION; HOUSED TRANSISTORS AND DIODES
02
Section Class Codes: B2540, B2528
Unified Class Codes: SMEAAB, SMCKAK
Language: GERMAN

721400 B7505362
THICK FILM TECHNIQUES FOR HYBRID INTEGRATED MICROWAVE
CIRCUITS
FUNK, W.; SCHILZ, W.
PHILIPS FORSCHUNGS-ABT., HAMBURG GMBH, GERMANY
RADIO AND ELECTRON. ENG. (GB) VOL.44 NO.9 504-8 SEPT.
1974 Coden: RDEE44
THE APPLICABILITY OF THICK FILM TECHNIQUE HAS BEEN
INVESTIGATED FOR FREQUENCIES ABOVE 1 GHz. BY USING A SPECIAL
TECHNIQUE (DIRECT METAL FOIL SCREENS) INTEGRATED MICROWAVE
CIRCUITS FOR FREQUENCIES UP TO 10 GHz HAVE BEEN FABRICATED.
THE SPECIAL REQUIREMENTS FOR MICROWAVE THICK FILM CIRCUITS ARE
DISCUSSED AND THE ELECTRICAL AND TECHNOLOGICAL PROPERTIES OF
THREE SELECTED MICROWAVE CIRCUITS ARE REPORTED IN DETAIL (3
Refs.)
Descriptors: HYBRID INTEGRATED CIRCUITS; SOLID-STATE
MICROWAVE CIRCUITS; THICK FILM CIRCUITS
Identifiers: THICK FILM TECHNIQUES; HYBRID INTEGRATED
MICROWAVE CIRCUITS
02
Section Class Codes: B2540
Unified Class Codes: SMEAAB

AEG-TELEFUNKEN, ULM, GERMANY
SOLID STATE TECHNOL. (USA) VOL.17 NO.10 69-72 OCT.
1974 Coden: SSTEP
A D.C. DIODE SPUTTER ETCH PROCESS IS DESCRIBED YIELDING A
SPUTTER ETCH RATE OF THE INSULATING MASKING LAYER WHICH IS
CONSIDERABLY SMALLER THAN THAT OF THE CONDUCTING MATERIAL.
WITH THIS TECHNIQUE WALL ANGLES OF ABOUT 60 DEGREES ARE
ACHIEVED WITH NO UNDERCUTTING (2 Refs)
Descriptors: SPUTTERING; INTEGRATED CIRCUIT PRODUCTION;
ETCHING; THIN FILM CIRCUITS
Identifiers: ALUMINA SUBSTRATE; POTENTIAL DISTRIBUTION;
STENCIL MASK; FABRICATION; PHOTORESIST MASK; SECONDARY
ELECTRONS; THIN FILM STRUCTURES; GAP WIDTH; DC DIODE SPUTTER
ETCH PROCESS; SPUTTER ETCH RATE; WALL ANGLES
02
Section Class Codes: B2524, B1267
Unified Class Codes: SMCEAH, ADGKAT

721397 B7505351
SCREEN: ESSENTIAL TOOL FOR THICK FILM PRINTING
FRANCONVILLE, F.; KURZWEIL, K.; STALNECKER, S.G.
COMPAGNIE MOHNEYWELL BULL., SAINT-OVEN, FRANCE
SOLID STATE TECHNOL. (USA) VOL.17 NO.10 61-8 OCT. 1974
Coden: SSTEP
MANY VARIABLES IN THICK-FILM PRINTING HAVE BEEN STUDIED AND
DESCRIBED IN THE LITERATURE. THEY REFER GENERALLY TO PASTE
BEHAVIOR AND PRINTING CONDITIONS. DIFFERENT SCREEN TYPES ARE
REVIEWED, AND COMPARISON OF THE METAL MASK VERSUS THE EMULSION
SCREEN FOR DIFFERENT APPLICATIONS ARE PRESENTED. THE MAIN
CHARACTERISTICS AND ADVANTAGES OF DIRECT-EMULSION TYPE SCREENS
ARE DISCUSSED IN TERMS OF SCREEN QUALITY CONTROL FOR
REPEATABLE PRINTING WITH SPECIAL ATTENTION TO SCREEN TENSION
EVOLUTION DURING ITS LIFETIME AND TO SELECTION OF THE PROPER
SOLVENT FOR SCREEN CLEANING. THE INFLUENCE OF VARIOUS SCREEN
PARAMETERS WILL BE DOCUMENTED BY TYPICAL PRINTED EXAMPLES AND
METHODS OF CONTROL OF THESE PARAMETERS IN PRODUCTION WILL BE
DESCRIBED (8 Refs)
Descriptors: THICK FILM CIRCUITS; INTEGRATED CIRCUIT
PRODUCTION; TOOLS; PRINTING
Identifiers: DIRECT EMULSION TYPE SCREEN; TENSION; EMULSION
THICKNESS MEASUREMENT; STAINLESS STEEL MESH; ALUMINUM FRAMES;
EPOXY ADHESIVE; THICK FILM PRINTING; PRINTING CONDITIONS;
METAL MASK; EMULSION SCREEN; QUALITY CONTROL; SCREEN TENSION;
SOLVENT; SCREEN CLEANING
02
Section Class Codes: B2522, B1269
Unified Class Codes: SMCCAX, ADGMAE

721397 B7505351
SCREEN: ESSENTIAL TOOL FOR THICK FILM PRINTING
FRANCONVILLE, F.; KURZWEIL, K.; STALNECKER, S.G.
COMPAGNIE MOHNEYWELL BULL., SAINT-OVEN, FRANCE
SOLID STATE TECHNOL. (USA) VOL.17 NO.10 61-8 OCT. 1974
Coden: SSTEP
MANY VARIABLES IN THICK-FILM PRINTING HAVE BEEN STUDIED AND
DESCRIBED IN THE LITERATURE. THEY REFER GENERALLY TO PASTE
BEHAVIOR AND PRINTING CONDITIONS. DIFFERENT SCREEN TYPES ARE
REVIEWED, AND COMPARISON OF THE METAL MASK VERSUS THE EMULSION
SCREEN FOR DIFFERENT APPLICATIONS ARE PRESENTED. THE MAIN
CHARACTERISTICS AND ADVANTAGES OF DIRECT-EMULSION TYPE SCREENS
ARE DISCUSSED IN TERMS OF SCREEN QUALITY CONTROL FOR
REPEATABLE PRINTING WITH SPECIAL ATTENTION TO SCREEN TENSION
EVOLUTION DURING ITS LIFETIME AND TO SELECTION OF THE PROPER
SOLVENT FOR SCREEN CLEANING. THE INFLUENCE OF VARIOUS SCREEN
PARAMETERS WILL BE DOCUMENTED BY TYPICAL PRINTED EXAMPLES AND
METHODS OF CONTROL OF THESE PARAMETERS IN PRODUCTION WILL BE
DESCRIBED (8 Refs)
Descriptors: THICK FILM CIRCUITS; INTEGRATED CIRCUIT
PRODUCTION; TOOLS; PRINTING
Identifiers: DIRECT EMULSION TYPE SCREEN; TENSION; EMULSION
THICKNESS MEASUREMENT; STAINLESS STEEL MESH; ALUMINUM FRAMES;
EPOXY ADHESIVE; THICK FILM PRINTING; PRINTING CONDITIONS;
METAL MASK; EMULSION SCREEN; QUALITY CONTROL; SCREEN TENSION;
SOLVENT; SCREEN CLEANING
02
Section Class Codes: B2522, B1269
Unified Class Codes: SMCCAX, ADGMAE

A BRIEF SUMMARY OF SOME OF THE CHARACTERISTICS OF POLYMER SOLUTIONS, WHICH AFFECT RHEOLOGY IS PRESENTED. THE RATES OF SHEAR OBSERVED IN ACTUAL SCREENING PROCESSES, AND THE MORE SUBTLE IMPLICATIONS OF VISCOELASTICITY ARE EXAMINED. THIS ARTICLE PROVIDES A BACKGROUND ON THE RHEOLOGY OF POLYMER SOLUTIONS. TO SHOW HOW RHEOLOGY CAN BE MODIFIED, AND CONTROLLED, AND TO PROVIDE SOME EXAMPLES RELATING TO THESE CONSIDERATIONS IN THICK FILM PASTES (13 Refs)
Descriptores: RHEOLOGY; THICK FILM CIRCUITS; INTEGRATED CIRCUIT PRODUCTION; VISCOELASTICITY; PRINTING
Identifiers: ELASTIC RESPONSES; RATE OF STRESS; TEMPERATURE; GEL STRUCTURES; VISCOUS FLOW; THIXOTROPIC TIME CONSTANT; SCREENABILITY; RHEOLOGY; POLYMER SOLUTIONS; SCREENING PROCESSES; VISCOELASTICITY; THICK FILM PASTES
02
Section Class Codes: B2522
Unified Class Codes: SMCCAX, DOEMAG, NCKGAH

721395 87505349
THICK FILM TECHNOLOGY
RIVERA, J.
REV. ESP. ELECTRON. (SPAIN) VOL.21 NO.238 42-5 SEPT.
1974 Code: 87E1BT

A HYBRID THICK FILM CIRCUIT IS PRODUCED BY PRINTING OR DEPOSITING A SERIES OF CONDUCTING, RESISTIVE, INSULATING OR DIELECTRIC COMPOUNDS AND THE PROCEDURE IS DESCRIBED. THE CONCEPT AND SPECIFICATIONS OF RESISTIVE FILMS ARE DISCUSSED AND COMPARED WITH THE SPECIFICATIONS OF THE SUBSTRATE AND PRE-PRINTED CONDUCTING FILMS. THE THICKNESS OF THE FILMS DEPOSITED IS MEASURED AND CONTROLLED BY A COMPARATOR OR A STETIHO PROFILEGRAPH OR A MICROSCOPE WITH AN OPTICAL APPLICATION DETECTOR. THE CHARACTERISTICS AND POTENTIAL APPLICATIONS OF THICK FILM CIRCUITS ARE ALSO CONSIDERED
Descriptores: THICK FILM CIRCUITS; THICK FILM RESISTORS; THICKNESS MEASUREMENT
Identifiers: HYBRID CIRCUITS; CIRCUIT PRINTING; FILM THICKNESS MEASUREMENT; THICK FILM TECHNOLOGY; DIELECTRIC COMPOUNDS; SPECIFICATIONS; RESISTIVE FILMS; SUBSTRATE; PRE-PRINTED CONDUCTING FILMS; CHARACTERISTICS; APPLICATIONS
02
Section Class Codes: B2522, B2210, B4441
Unified Class Codes: SMCCAX, SEEAAS, BKECAB
Language: SPANISH

FABER, M.L., JR.
HEWLETT-PACKARD, LOVELAND, COLO., USA
IEEE TRANS. PARTS, HYBRIDS AND PACKAG. (USA) VOL. PHP-10 NO.3 169-74 SEPT. 1974 Code: IEPHAA
SEE ABSTR. B34122 OR C20408 OF 1974 (1 Refs)
Descriptores: HYBRID INTEGRATED CIRCUITS; THIN FILM CIRCUITS; INTEGRATED CIRCUIT PRODUCTION; LASER BEAM APPLICATIONS; THIN FILM RESISTORS; ELECTRONICS APPLICATIONS OF COMPUTERS
Identifiers: LASERS; HYBRID ICS; THIN FILM ICS; TAN; ALGORITHMIC TRIMMING; ACTIVE CIRCUITRY
02
Section Class Codes: C8842, B2540, B2524, B2980
Unified Class Codes: WNEEAQ, SWEAAB, SMCEAH, EOMAA

715397 87503419
A NEW CLASS OF HIGH PERFORMANCE BROADBAND 3 DB DIRECTIONAL COUPLERS IN THIN FILM TECHNIQUE
SCHIEK, B.; KOHLER, J.
PHILIPS FORSCHUNGSABTEILUNG HAMBURG GMBH, GERMANY
4TH EUROPEAN MICROWAVE CONFERENCE 536-40 1974
10-13 SEPT. 1974 MONTREUX, SWITZERLAND
MICROWAVE EXHIBITIONS AND PUBLISHERS SURREY, ENGLAND

THE AUTHORS SHOW THAT PLANAR BROADBAND 3 DB DIRECTIONAL COUPLERS CAN BE CONSTRUCTED IN MICROSTRIP-SLOT AND THIN FILM TECHNIQUE. EIGHTING BOTH SIDES OF A CERAMIC SUBSTRATE, NO OVERLAPPING OR BONDING WIRES ARE NEEDED AND THE DIMENSIONS OF THE LAYOUT ARE BY NO MEANS CRITICAL. AN ACCURATE STRAIGHTFORWARD AND CLOSED FORM THEORY ALLOWS 3 DB COUPLERS TO BE CONSTRUCTED WHOSE MEASURED PERFORMANCE IS WITHIN A FEW TENS OF 1 DB OF THE PREDICTED VALUE. THE MEASURED INSERTION LOSS OF THESE COUPLERS, INCLUDING THE CONNECTOR LOSSES, IS AS LOW AS 0.3 DB IN C-BAND AND 0.6 DB IN X-BAND. THE 400-0.5 DB BANDWIDTH IS APPROXIMATELY ONE OCTAVE AND THE ISOLATION OF THE COUPLER IS BETTER THAN 30 DB OVER THIS BAND (6 Refs)
Descriptores: DIRECTIONAL COUPLERS; THIN FILM CIRCUITS; STRIP LINE COMPONENTS
Identifiers: THIN FILM TECHNIQUE; CERAMIC SUBSTRATE; CLOSED FORM THEORY; INSERTION LOSS; CONNECTOR LOSSES; C-BAND; X-BAND; ISOLATION; MICROSTRIP SLOT TECHNIQUE; WIDEBAND 3 DB DIRECTIONAL COUPLERS; HALF DECIBEL BANDWIDTH
06
Section Class Codes: B3290, B2524
Unified Class Codes: ENMAAN, SMCEAH

714927 B7502927
ADVANCES IN LOW TEMPERATURE DIE BONDING TECHNIQUES
BULL, D.N.
MOTOROLA INC., FT. LAUDERDALE, FLA., USA
SOLID STATE TECHNOL. (USA) VOL.17, NO.9 60-5 SEPT.
1974 Coden: SSTEAP
WHEN HYBRID MICROCIRCUITS WERE FIRST PRODUCED, THE ACTIVE
DEVICES WERE EITHER ENCAPSULATED IN STANDARD PACKAGES OR
EUTECTICALLY DIE BONDED TO GOLD PLATED TABS. DURING ASSEMBLY,
THESE PACKAGES OR TABS WERE ATTACHED TO THE FILM CIRCUIT WITH
A LOW TEMPERATURE SOLDER. SENSITIVITY OF THE FILM RESISTORS TO
THE HIGH TEMPERATURE ASSOCIATED WITH EUTECTIC DIE BONDING
REQUIRED THIS PREPACKAGED APPROACH. SINCE THEN, CIRCUIT
DENSITY HAS INCREASED AND THE REQUIREMENT OF MANY ACTIVE
DEVICES FURTHER COMPLICATES THE PROCESS WITH DIE PARAMETER
SHIFTS AND BOND PAD LEACHING (FLOATING) EFFECTS. THIS ARTICLE
DISCUSSES SEVERAL TECHNIQUES DEVELOPED TO ATTACH THE DIE
DIRECTLY TO THE MODULE WHICH AVOIDS OR REDUCES THESE EFFECTS.
ALSO MONOLITHIC DEVICE ASSEMBLY OF HEAT SENSITIVE DICE CAN USE
THESE TECHNIQUES TO ADVANTAGE (7 Refs)
Descriptors: INTEGRATED CIRCUIT PRODUCTION; JOINING
PROCESSES
Identifiers: LOW TEMPERATURE DIE BONDING TECHNIQUES; HYBRID
MICROCIRCUITS; FILM CIRCUIT; EUTECTIC DIE BONDING; MONOLITHIC
DEVICE ASSEMBLY; EPOXY DIE BONDING
02
Section Class Codes: B2560
Unified Class Codes: SMGAAR

714924 B7502921
A HIGH DENSITY THICK FILM MULTILAYER PROCESS FOR LSI
CIRCUITS
ILCHENFELTZ, R.N.; MOGEY, L.E.; WALTER, D.W.
RAYTHEON CO., BEDFORD, MASS., USA
IEEE TRANS. PARTS, HYBRIDS AND PACKAG. (USA) VOL. PHP-10
NO.3 105-8 SEPT. 1974 Coden: IEPHAA
SEE ABSTR. U34118 OF 1974 (3 Refs)
Descriptors: HYBRID INTEGRATED CIRCUITS; THICK FILM CIRCUITS
; LARGE SCALE INTEGRATION; INTEGRATED CIRCUIT PRODUCTION
Identifiers: HYBRID LSI; HIGH DENSITY THICK FILM MULTILAYER
PROCESS; LSI CIRCUITS
02
Section Class Codes: B2540, B2522
Unified Class Codes: SMCAAB, SMCCAX

714905 B7502896
REAL TIME DETECTION OF MICROCRACKS IN BRITTLE MATERIALS
USING STRESS WAVE EMISSION (SWE)
VAVARIOLIS, S.-J.
WESTERN ELECTRIC CO., PRINCETON, N.J., USA
IEEE TRANS. PARTS, HYBRIDS AND PACKAG. (USA) VOL. PHP-10
NO.3 105-8 SEPT. 1974 Coden: IEPHAA

SEE ABSTR. B34086 OF 1970 (19 Refs)
Descriptors: THIN FILM CIRCUITS; INTEGRATED CIRCUIT TESTING;
MATERIALS TESTING; CRACK DETECTION
Identifiers: THIN FILM IC TESTING; REAL TIME DETECTION OF
MICROCRACKS; BRITTLE MATERIALS; STRESS WAVE EMISSION
02
Section Class Codes: B2524, B1268
Unified Class Codes: SMCEAH, ZGTAAX

714904 B7502895
MOLECULAR BONDING CONDUCTIVE FILMS
SAYERS, P.
ENGELHARD MINERALS AND CHEM. CORP., EAST NEWARK, N.J., USA
SOLID STATE TECHNOL. (USA) VOL.17, NO.9 60-9 SEPT.
1974 Coden: SSTEAP
A REACTIVE BOND MECHANISM TERMED 'MOLECULAR BONDING' HAS
BEEN DEVELOPED AND INCORPORATED IN CONDUCTIVE SYSTEMS BASED ON
GOLD, SILVER, ALUMINUM OR NICKEL. THE REACTIVE BOND MECHANISM
IS UNIQUE IN THAT THE INTERFACIAL ENERGY ASSOCIATED WITH THE
CONDUCTION-REACTION PRODUCT INTERFACE IS GREATER THAN THE
SURFACE TENSION OF MOLTEN ALUMINUM OR SILVER AND THESE
CONDUCTORS MAY BE FIRED AT TEMPERATURES WHICH EXCEED THEIR
MELTING POINTS. SIGNIFICANTLY, THE LEACH RESISTANCE AND
ADHESION WERE GREATLY IMPROVED FOR SILVER AND GOLD CONDUCTORS
AND TECHNIQUES WERE DISCOVERED WHICH PERMIT STANDARD AIR
ATMOSPHERE FIRING OF THE BASE METALS ALUMINUM AND NICKEL. THE
HISTORY OF DEVELOPMENT, THE REASONS FOR THE DEVELOPMENT AND
THE POTENTIAL ADVANTAGES OF THESE MATERIALS TO THICK FILM
USERS ARE PRESENTED. THE APPLICATIONS FOR THESE MATERIALS AND
THEIR FUTURE POTENTIAL IS EXPLORED (5 Refs)
Descriptors: THICK FILM CIRCUITS; CONDUCTORS (ELECTRIC)
Identifiers: MOLECULAR BONDING CONDUCTIVE FILMS; CONDUCTIVE
SYSTEMS; REACTIVE BOND MECHANISM; LEACH RESISTANCE; ADHESION;
THICK FILM CONDUCTORS
02

Section Class Codes: B2522, B2205
Unified Class Codes: SMCCAX, SECAAC

714303 B7502894
DIP-TINNING EQUIPMENT FOR THICK-FILM INTEGRATED CIRCUITS
FADENYI, E.; SULLYOK, P.
FIHOMTECH, AND MIKROTECH. (HUNGARY) VOL.13, NO.8 230-2
AUG. 1974 Code: FNHAY
DESCRIBES EQUIPMENT BUILT FOR TINNING THICK FILM CIRCUIT
PLATES OF 1/2SECONDS AND 1SECONDS *1SECONDS *1SECONDS
DIMENSIONS. IT CAN WORK IN INTERMITTENT OR CONTINUOUS
OPERATION. THE OUTPUT IN CONTINUOUS OPERATION IS 180
PLATES/HOUR. DIP-TINNING IS CARRIED OUT BY MEANS OF A ROTATING
DISC. TEMPERATURE OF THE BATH CAN BE ADJUSTED (3 Refs)
Descriptores: THICK FILM CIRCUITS; INTEGRATED CIRCUIT
PRODUCTION
Identifiers: INTEGRATED CIRCUIT PRODUCTION; DIP TINNING
EQUIPMENT; THICK FILM INTEGRATED CIRCUITS
02
Section Class Codes: B2522, B1269
Unified Class Codes: SNCCAX, ADGMAE
Language: HUNGARIAN

714350 B7502471
A WIDE-BAND FEEDFORWARD AMPLIFIER
MEYER, R.G.; ESCHENBACH, R.; EGERLEY, W.M., JR.
UNIV. CALIFORNIA, BERKELEY, USA
JEE J. SOLID-STATE CIRCUITS (USA) VOL. SC-9, NO.6 422-8
DEC. 1971 Code: IJSCUC
THE DESIGN OF A WIDE-BAND FEEDFORWARD AMPLIFIER IN THE
FREQUENCY RANGE 30-300 MHz IS DESCRIBED. EXPRESSIONS ARE
DERIVED FOR FEEDFORWARD AMPLIFIER SENSITIVITY, AND THE EFFECT
OF IMPERFECT LOOP CANCELLATION IS DESCRIBED. THE EFFECT OF
CIRCUIT IMBALANCE ON GAIN AND TERMINAL IMPEDANCES IS
INVESTIGATED. THE CIRCUIT IS REALIZED IN THIN-FILM HYBRID
FORM, AND MEASUREMENTS SHOW 20 DB OF DISTORTION IMPROVEMENT AT
300 MHz. PRACTICAL ASPECTS OF CIRCUIT ADJUSTMENT AND OPERATION
ARE CONSIDERED (7 Refs)
Descriptores: THIN FILM CIRCUITS; HYBRID INTEGRATED CIRCUITS;
AMPLIFIERS; SENSITIVITY ANALYSIS
Identifiers: 30-300 MHz; FEEDFORWARD AMPLIFIER SENSITIVITY;
IMPERFECT LOOP CANCELLATION; WIDEBAND FEEDFORWARD AMPLIFIER;
THIN FILM HYBRID
02
Section Class Codes: B1840, B2524, B2540
Unified Class Codes: ETHAAB, SMCEAH, SMEAAB

714513 B7502418
A LUMP-ELEMENT APPROACH TO MICROWAVE INTEGRATED CIRCUITS
KATOH, H.
NIPPON ELECTRIC CO. LTD., KAWASAKI
ELECTRON. AND COMMUN. JAP. (USA) VOL.56 NO.6 47-53
JUNE 1973 Code: ECOJAL
THE FREQUENCY CHARACTERISTICS OF A SPIRAL INDUCTOR AND A
THIN-FILM CAPACITOR AND THEIR Q-VALUES ARE DESCRIBED. BASED ON

THE RESULTS. A NEW IC STRUCTURE IS FOUND WHICH HAS A HIGH
Q-VALUE: A QUARTZ PLATE IS USED AS A SUBSTRATE AND
RF-SPUTTERED SiO₂/SUB 2/ FILMS ARE USED AS CROSSOVER
INSULATIONS. A MICROMINIATURE L-BAND HIGH-PASS FILTER AND A 1.7
GHZ TRANSISTOR AMPLIFIER WERE FABRICATED WHICH HAVE
CHARACTERISTICS ALMOST EQUAL TO THOSE OF CONVENTIONAL
DISTRIBUTED CONSTRUCTION. MEASURED PROPERTIES WITHOUT
ADJUSTMENT ARE IN GOOD AGREEMENT WITH DESIGN VALUES (13
Refs)

Descriptores: INDUCTORS; SOLID-STATE MICROWAVE CIRCUITS; THIN
FILM CIRCUITS; THIN FILM CAPACITORS; MICROWAVE AMPLIFIERS;
MICROWAVE FILTERS; HYBRID INTEGRATED CIRCUITS
Identifiers: THIN FILM CAPACITORS; L-BAND HIGH PASS FILTER;
THIN FILM CAPACITOR; THIN FILM CIRCUITS; MICROWAVE INTEGRATED
CIRCUITS; SPIRAL INDUCTOR; LUMPED ELEMENTS
02

Section Class Codes: B1820, B2524, B1880, B1840, B2540
Unified Class Codes: ETEAAD, SMCEAH, ETRAAM, ETHAAB, SMEAAB

714507 B7502411
HARMONICALLY PUMPED STRIPLINE DOWNCONVERTER
SCHNEIDER, M.V.; SHELL, W.W., JR.
BELL LABS., HOLMDEN, N.J., USA
4TH EUROPEAN MICROWAVE CONFERENCE 599-603 1974
10-13 SEPT. 1974 MONTREUX, SWITZERLAND
MICROWAVE EXHIBITIONS AND PUBLISHERS SURBITON, SURREY,
ENGLAND

A NOVEL THIN FILM DOWNCONVERTOR PUMPED AT A MULTIPLE OF
THE LOCAL OSCILLATOR FREQUENCY HAS GIVEN A CONVERSION LOSS
COMPARABLE TO THE PERFORMANCE OF CONVENTIONAL BALANCED MIXERS.
THE CONVERTOR CONSISTS OF TWO STRIPLINE FILTERS AND TWO
SCHOTTKY BARRIER DIODES WHICH ARE SHUNT MOUNTED IN A STRIP
TRANSMISSION LINE. THE CONVERSION LOSS MEASURED AT A SIGNAL
FREQUENCY OF 3.5 GHZ IS 3.2 DB FOR A PUMP FREQUENCY OF 1.7 GHZ
AND 4.9 DB FOR A PUMP FREQUENCY OF 0.85 GHZ. THE CIRCUIT LOOKS
ATTRACTIVE FOR USE AT MILLIMETER-WAVE FREQUENCIES WHERE STABLE
PUMP SOURCES WITH LOW FM NOISE ARE NOT READILY AVAILABLE (6
Refs)

Descriptores: FREQUENCY CONVERTORS; PARAMETRIC DEVICES;
SUPERHETERODYNE RECEIVERS; MICROWAVE FILTERS; SCHOTTKY-BARRIER
DIODES; STRIP LINE COMPONENTS; HYBRID INTEGRATED CIRCUITS;
THIN FILM CIRCUITS
Identifiers: THIN FILM DOWNCONVERTOR; CONVERSION LOSS;
STRIPLINE FILTERS; SCHOTTKY BARRIER DIODES; LOW FM NOISE;
LOCAL OSCILLATOR SUBMULTIPLE PUMP FREQUENCY
06

Section Class Codes: B1810, B2524, B3290, B1890, B2540
Unified Class Codes: ETEAAN, SMCEAH, EMMAAM, ETTAAC, SMEAAB

ACTIVE FILTER BUILDING BLOCK CAPABLE OF REALIZING A VARIETY OF SINGLE AMPLIFIER BIQUADRATIC TOPOLOGIES AND A WIDE RANGE OF TRANSFER FUNCTIONS. THE CIRCUITS MOST COMMONLY USED ARE DESCRIBED. THE DOMINANT PHYSICAL DESIGN FEATURES AND THEIR IMPACT ON THE MANUFACTURE AND USE OF STAR ARE DISCUSSED (B Refs)

06
 Descriptors: ACTIVE FILTERS; HYBRID INTEGRATED CIRCUITS; THIN FILM CIRCUITS; RESONATORS; INTEGRATED CIRCUIT PRODUCTION
 Identifiers: THIN FILM HYBRID IC; ACTIVE BIQUADRATIC FILTER
 SECTION: SINGLE AMPLIFIER BIQUADRATIC TOPOLOGIES; TRANSFER
 FUNCTIONS: PHYSICAL DESIGN FEATURES; MANUFACTURE; STANDARD
 TANTALUM ACTIVE RESONATOR

06
 Section Class Codes: B1800, B2540, B2524
 Unified Class Codes: ETRAAM, SWEAAB, SMCEAH

7041194 1623
 THE ADVANTAGES OF THIN FILM HYBRIDS IN INSTRUMENTS
 JONES, P. D.
 HEWLETT PACKARD, SOUTH QUEENSFERRY, SCOTLAND
 ELECTRON. COMPONENTS (GB) VOL. 16, NO. 14 29-33 13 AUG.
 1974 CODES: ELCCA3

BECAUSE OF THE CLOSE ELECTRICAL COUPLING OF INDIVIDUAL ELEMENTS IN MONOLITHIC INTEGRATED CIRCUITS, THE IMMEDIATE TRANSLATION OF A GIVEN CIRCUIT INTO A MONOLITHIC IC IS NOT POSSIBLE, PARTICULARLY WITH HIGH FREQUENCY ANALOGUE CIRCUITRY. HOWEVER, CIRCUITS OF THIS TYPE ARE HEAVILY FABRICATED AS HYBRID ICs. PROCESSING TECHNIQUES AND ELECTRICAL AND ECONOMIC ADVANTAGES IN UTILIZING HYBRID TECHNOLOGY ARE DISCUSSED

02
 Descriptors: THIN FILM CIRCUITS; HYBRID INTEGRATED CIRCUITS; INSULATION
 Identifiers: HF CIRCUITRY; THIN FILM CIRCUITS; ELECTRICAL
 ADVANTAGES; ECONOMIC ADVANTAGES; PROCESSING TECHNIQUES;
 INSTRUMENTS; ANALOGUE CIRCUITRY; HYBRID ICs; HYBRID TECHNOLOGY

02
 Section Class Codes: B4200, B2524, B2540
 Unified Class Codes: BECAAQ, SMCEAH, SWEAAB

7041194 1623
 METALLIZING MULTILAYER CERAMIC TOP AND BOTTOM SIDE
 HADDAD, M.C.
 IBM TECH. DISCLOSURE BULL. (USA) VOL. 16, NO. 11 3612
 APRIL 1974 CODES: IUMTAA

VARIOUS METALS CAN BE PLATED UPON FIRED GLASS FRITTED NOBLE METAL PASTE CONDUCTORS WHICH PROVIDE THE SUBSTRATE WITH THE PROPER METALLURGY FOR PERFORMING THE FUNCTIONAL REQUIREMENTS OF SITES FOR SEMICONDUCTOR CHIP JOINING, PIN DRAZING, AND SO FORTH. THE METALLURGY CAN THEN WITHSTAND CORROSION IN MOST HOSTILE ENVIRONMENTS

02
 Descriptors: METALLISATION; THICK FILM CIRCUITS; INTEGRATED
 CIRCUIT PRODUCTION
 Identifiers: METALLIZING MULTILAYER CERAMIC; FIRED GLASS
 FRITTED NOBLE METAL PASTE CONDUCTORS; SEMICONDUCTOR CHIP
 JOINING; PIN BRAZING

02
 Section Class Codes: B2522, B2540
 Unified Class Codes: SMCCAX, SWEAAB

7041194 1623
 STAR' AN ACTIVE BIQUADRATIC FILTER SECTION
 FRIEND, J.W.; HARRIS, C.A.; HILBERMAN, D.
 BELL TELEPHONE LABS. INC., HOLMDEL, N.J., USA
 IEEE

PROCEEDINGS OF THE 1974 IEEE INTERNATIONAL SYMPOSIUM ON
 CIRCUITS AND SYSTEMS 640-4 1974
 22-25 APRIL 1974 SAN FRANCISCO, CALIF., USA
 IEEE NEW YORK, USA

STAR (STANDARD TANTALUM ACTIVE RESONATOR) IS A THIN FILM

